THE MEDICAL JOURNAL OF AUSTRALIA

VOL. I.—33RD YEAR. SYDNEY, SATURDAY, FEBRUARY 23, 1946. No. 8.

Table of Contents.

[The Whole of the Literary Matter in THE MEDICAL JOURNAL OF AUSTRALIA is Copyright.]

ORIGINAL ARTICLES— Page.
Acute Porphyria, with Reports of Two Fatal Cases, by E. H. Derrick 241
A Note on the Use of Penicillin in the Laboratory Diagnosis of Whooping-Cough, by Phyllis M. Anderson 244
Epidemic Polyarthritis, by P. G. Dowling 245

REPORTS OF CASES—
Moulds in the Lungs, by J. B. Cleland 247

REVIEWS—
Neurosurgery 247
Massage and Medical Gymnastics 248

LEADING ARTICLES—
Australia and Science: The University of Sydney and Scientists 249

CURRENT COMMENT—
Porphyria 250

ABSTRACTS FROM MEDICAL LITERATURE—
Pædiatrics 252
Orthopædic Surgery 253

MEDICO-LEGAL—
Hocking versus Bell 254

BRITISH MEDICAL ASSOCIATION NEWS—
Notice 273

MEDICAL SOCIETIES— Page.
The Medico-Legal Society of Victoria 273

POST-GRADUATE WORK—
The University of Queensland Post-Graduate Medical Education Committee 273

CORRESPONDENCE—
Politics and the Medical Profession 273
Recent Advances in the Diagnosis and Treatment of Lumbar Intervertebral Disk Disease 274
Inguinal Hernia and its Repair 274
Ulcers in the Mouth: An Appeal for Help 274
Toothache and Folk-Lore 275
Functional Disorders 275
Obstetric Bulletins 275
The Adequacy of Medical Training 275
The Digestion of Dogs and Chronic Osteomyelitis 275

NAVAL, MILITARY AND AIR FORCE—
Appointments 275

AUSTRALIAN MEDICAL BOARD PROCEEDINGS—
Queensland 276

BOOKS RECEIVED 276

MEDICAL APPOINTMENTS 276

DIARY FOR THE MONTH 276

MEDICAL APPOINTMENTS: IMPORTANT NOTICE .. 276

EDITORIAL NOTICES 276

ACUTE PORPHYRIA, WITH REPORTS OF TWO FATAL CASES.

By E. H. DERRICK,
The Queensland Institute of Medical Research, Brisbane.

PORPHYRIA is a condition due to a disorder of porphyrin metabolism. The abnormal excretion of porphyrins in the urine constitutes the symptom porphyrinuria.

Porphyrins comprise an integral part of the molecules of hæmoglobin, myoglobin and cytochrome. The metabolic error in porphyria is possibly related to some enzyme concerned in the synthesis of one or other of these molecules. The porphyrins in the urine do not come from destruction of hæmoglobin, so that the old term "hæmatoporphyrinuria" is a misnomer.

Porphyria occurs in two main types—congenital and acute. Congenital porphyria is an extremely chronic condition. It appears at birth or early in life, and is characterized by predominance in males, by the passage in the urine of large amounts of porphyrin, particularly uroporphyrin I, by photosensitivity and by discoloration of the teeth by impregnated uroporphyrin.

Acute porphyria differs in many respects from the congenital form; it appears later, usually during the third or fourth decade; females are affected three times as often as males; photosensitivity is rare; pigmentation of the teeth does not occur; the outstanding clinical features refer to the nervous system and the abdomen; the urinary porphyrin is predominantly uroporphyrin III. It resembles the congenital form in that a familial tendency is often present.

An attack of acute porphyria is actually an episode in the course of a chronic disease. Attacks may alternate with remissions for years. The chief clinical manifestations of the acute attack are the passage of dark reddish-brown urine, severe abdominal pain associated usually with nausea, vomiting and constipation, and nervous symptoms. The last may include paræsthesiæ, pain in limbs, various forms of paralysis, toxic psychosis, delirium, coma *et cetera*. Fever or leucocytosis may or may not be present. Jaundice and renal damage have been described. Menstrual disturbances, particularly amenorrhœa, are frequent. Pigmentation of the skin occurs occasionally.

There is no satisfactory treatment.

The cause of the acute attack is obscure. The metabolic error is not limited to the period of acute symptoms; these patients may excrete porphyrin during the remissions. Symptoms are probably due to the toxic action on nerve cells of porphyrins or possibly of other pigments. Spasm of the bowel may explain the abdominal pain. The acute attack may end fatally—a termination frequently due to respiratory failure from bulbar involvement. The onset of acute episodes has been ascribed in some cases to the ingestion of various drugs—sulphonal, barbiturates *et cetera*. In other cases no such cause is apparent. It is likely that the drugs or toxic substances act only as precipitating factors in subjects with a chronic disorder of porphyrin metabolism. (Various drugs may cause the excretion of small amounts of porphyrin in the urine of persons who have no metabolic error.)

During the attack the urine is characteristically dark or red. It may be normal in colour when passed, and may darken on standing. It contains uroporphyrins, which are often excreted as a zinc metal complex. On spectroscopic examination this substance gives two bands easily mistaken for those of oxyhæmoglobin, and it has been suggested that some cases of porphyrinuria have in this way been wrongly regarded as of hæmoglobinuria. If a little concentrated hydrochloric acid is added to the urine, the metal complex is immediately broken up and the bands are replaced by those of acid uroporphyrin. Since porphyrins contain no iron or protein, the tests of the urine for protein and blood will give negative results. Uroporphyrin and its zinc metal complex may be present in the urine also during the remissions.

Other pigments may be involved in porphyria and contribute to the colour of the urine. The urine also contains a colourless substance, porphobilinogen, the

presence of which Watson and Schwartz[1] believe to be pathognomonic of porphyria. They have devised for it a simple test—a modification of Ehrlich's aldehyde reaction. The test will obviously be of most value in those cases in which the freshly voided urine is normal in colour. The test is as follows. Equal parts of urine and Ehrlich's reagent are mixed in a test tube. To this mixture is then added an equal volume of a saturated aqueous solution of sodium acetate. A few millilitres of chloroform are added, and the solutions are thoroughly mixed. The aldehyde compound of porphobilinogen—deep red in colour—remains in the aqueous fraction, while that of urobilinogen is completely extracted by the chloroform. The solution must contain the concentration of salt as achieved by the above-mentioned proportions; otherwise the extraction of urobilinogen will not be complete. It is believed that a chloroform-insoluble compound, as obtained by the method described, is due to porphobilinogen and is pathognomonic of porphyria. (Watson and Schwartz made up Ehrlich's reagent according to the following formula: paradimethylamino-benzaldehyde, 0·7 gramme; concentrated hydrochloric acid, 150 millilitres; distilled water, 100 millilitres.)

By means of this test Nesbitt[2] discovered two cases of latent porphyria among 43 relatives of a patient. He suggests that the disease is not so unusual as was formerly supposed, and that with a more general knowledge of the subject more cases will be detected. Actually more than 250 cases of acute porphyria had been reported up to 1939.

Two cases have recently come to my notice and are described below. I am indebted to the articles by Nesbitt and by Nesbitt and Watkins[3] for an understanding of the disease. Another informative review is that by Chandler, Harrison and Rimington.[4] A discussion of the chemistry of the various porphyrins as well as fuller details of the disease will be found in these articles.

Reports of Cases.

CASE I.—Mrs. D.C., aged twenty-seven years, was admitted to hospital on June 22, 1944. In 1931, at the age of fourteen years, she had had a severe illness diagnosed as meningitis. The symptoms were high temperature and delirium. The illness lasted ten days and ended abruptly. In 1935 she commenced training as a mental nurse. During her training she was described as a tall girl, freckled, with reddish complexion and hair, of a restless, somewhat temperamental type, but intelligent and capable, probably above the average. Her health in general was good until 1942 or 1943, though her mother said that in about 1938 there occurred a mysterious illness, lasting about a week, in which the symptoms were exactly the same as in the illness of 1931. She married about 1942, but as her husband was in the Australian Imperial Force, she continued to nurse till October, 1943, when she resigned because of ill health. A medical report in the previous month mentioned pallor, considerable loss of weight, an unhealthy condition of the pelvic organs, nervous exhaustion and mental depression. Some unhappiness was due to marital complications. For the next eight months she suffered from general weakness, but was able to undertake light duties. There was no mention in the past history of abnormally coloured urine or of photosensitivity.

The present illness began with the onset of a menstrual period about a fortnight before her admission to hospital. (She had always suffered from dysmenorrhœa.) She first complained of pain in the legs and inability to walk. Then followed severe abdominal pain and vomiting. She could not sleep, even with the help of drugs. The temperature was raised. At the time of her admission to hospital she complained of pain in the abdomen and legs, sleeplessness and worry. The abdomen was tense and tender. While she was in hospital she had slight fever on four days, the maximum temperature being 37·4° C. (99·4° F.). The pulse rate varied from 84 to 130 per minute. Abdominal pain continued for some days. Constipation and occasional vomiting were present. She also had pain and tenderness in the back and limbs. The limb pains continued till June 30, 1944. The extremities were always cold. There was no loss of sensation and the reflexes were present. Sleeplessness was the rule. A variety of analgesics and sedatives was given. She was noted to be emotional and restless. She was noisy at times, calling out for the nursing staff and disturbing other patients. In spite of her illness she was keen to be up and about and repeatedly got out of bed. On other days she was depressed. She gradually became weaker and died on July 3. The final illness had lasted about 25 days.

On June 24 the red blood cells numbered 5,200,000 and the leucocytes 14,000 per cubic millimetre. Neutrophile cells comprised 86% and lymphocytes 14% of the leucocytes. The hæmoglobin value was 100%. Punctate basophile cells numbered 4,000 per million red cells. The Wassermann and Kline tests produced no response. On the day of death the patient's blood contained 45 milligrammes of urea per 100 millilitres.

The daily quantity of urine passed was apparently normal. The specific gravity varied from 1,012 to 1,024, and the urine contained no albumin or sugar. The colour was amber as a rule, sometimes reddish brown; that in the bladder at autopsy was dark reddish-brown. Examination of the urine under ultra-violet light revealed intense pink fluorescence. Spectroscopic examination revealed absorption bands regarded as those of oxyhæmoglobin; no doubt these were really those of the zinc porphyrin complex. The urine was acidified with glacial acetic acid and shaken with amyl alcohol according to the technique described by Harrison.[5] The extract showed spectroscopically the bands of alkaline porphyrin. When hydrochloric acid was added they changed to those of acid porphyrin. No test was made for porphobilinogen.

The autopsy provided very little significant information. The patient's hair was reddish, but the face was rather bronzed, the colour being more reminiscent of a seaside holiday than a period in hospital. Small hæmorrhages were present in the lungs, and congestion of the liver and kidneys and evidence of old salpingitis were found. The uterine tubes were blocked at the outer ends and were slightly distended with blood-stained fluid.

Histological examination of the *medulla oblongata* revealed many more *corpora amylacea* than are usual at the patient's age. Large groups of them were seen in the floor of the fourth ventricle. This implies that there had been some destruction of nervous tissue. One arteriole was surrounded by a thick ring of lymphocytes with a few histiocytes. In other vessels a few perivascular lymphocytes were seen. In a section of parietal cortex a few lymphocytes were noticed around some vessels and small groups of histiocytes containing yellow pigment around others. *Corpora amylacea* were few. Some petechiæ were present in both medulla and cortex.

There was some cloudy swelling of liver and kidney cells. Many hepatic cells and Kupffer cells contained fat. There were no abnormal deposits of pigment. The heart and spleen tissues were normal. Examination of lung section revealed early bronchopneumonia not evident macroscopically.

Because of a clinical suspicion of lead poisoning, the organs were submitted to the Deputy Government Analyst, Mr. S. B. Watkins, M.Sc. He found lead to be present in the following amounts, expressed as milligrammes per 100 grammes of tissue: liver, 0·31; spleen, 0·15; kidney, 0·23; brain, 0·2; rib, 1·4; skull, 2·1. The urine contained 0·05 milligramme per litre. Such amounts do not support a diagnosis of lead poisoning. The analyst found no other poison in the viscera.

The immediate family consisted of the father, mother, two brothers and two sisters. As they lived in the country it was not possible to examine them, but an opportunity arose in June, 1945, to interview the mother, aged fifty years. The result of that interview, recounted below, suggests strongly that she too suffered from porphyria. The father was healthy. Urine from one brother and one sister was examined, but no significant results were obtained.

The mother had noticed that her urine became dark at times. She had suffered from periodic attacks of pain and vomiting for at least ten years. The pain might continue for some weeks and then she might be free from pain for months. An attack seven years before had been diagnosed as due to gastric ulcer; for this she was in and out of hospital for four months. An X-ray examination at the end of that time showed no sign of ulcer. The severest attack was the most recent; it had occurred in April, 1945, and lasted for three weeks. She had a "terrific" pain in the left side of the chest (the usual site of the pain), extending to the left costal margin, the throat and the back of the neck. She vomited repeatedly.

A sample of urine obtained on June 8 was deep amber in colour. With the Watson-Schwartz test a pink colour was given which was not taken up by the chloroform. Under the ultra-violet light salmon-pink fluorescence was detected in the urine. The absorption bands of porphyrin could not, however, be demonstrated spectroscopically in the small sample of urine available. A larger sample was obtained

three days later. It was pale in colour; it fluoresced normally (light blue) with ultra-violet light and showed no spectroscopic abnormality. It reacted like the first sample to the Watson-Schwartz test. Neither sample of urine became darker on standing.

CASE II.—Miss N.D., aged twenty-four years, was first admitted to hospital on April 25, 1943, complaining of acute pain in the lower part of the abdomen and back of three days' duration. This accompanied the onset of menstruation. During the prevous twelve months she had had some vague ill health with tiredness, not requiring medical advice, and had noticed the passage of dark brown urine on two or three days a week during that period. She was, however, well just before the present attack began.

On examination of the patient, the temperature and pulse were normal. The abdomen was soft, and in it neither tenderness nor swelling was observed. The urine was reddish-brown and contained no albumin or sugar, and microscopic examination revealed no pus or red cells. The uterus was retroverted. No tenderness was present in the fornices. The pulse rate was recorded every hour on the night of April 26; it rose to 132 per minute. Severe lower abdominal pain and pronounced sweating were present, but no rise in temperature. It was feared that some surgical emergency had developed in the lower part of the abdomen, perhaps with hæmorrhage.

After consultation, laparotomy was performed on the morning of April 27. In the abdomen a very small quantity of blackish fluid was seen between the coils of intestine. The viscera were normal. No abnormal peristalsis was observed. On this morning the urine darkened to a port-wine colour. This colour persisted for several days and then gradually became lighter. Some specimens were normal in colour. During the period up to May 9 the reddish-brown coloration reappeared in the urine, but not the port-wine colour. In an examination of the urine on May 12, alkaline and acid porphyrin were in turn demonstrated spectroscopically in an amyl alcohol extract.

The severe pain recurred, necessitating the free use of morphine. An area of hyperæsthesia on the inside of the thigh, noticed on April 26, gradually disappeared. Blood examination on May 11 showed that the erythrocytes numbered 6,080,000 and leucocytes 12,400 per cubic millimetre (neutrophile cells 74%, lymphocytes 22%, eosinophile cells 4%). The hæmoglobin value was 118%. No abnormality in the heart and lungs was revealed in electrocardiogram or skiagram. The reflexes were elicited normally. The abdomen was not tender and could be palpated deeply.

During the next few months the patient's condition was pitiable in spite of much symptomatic treatment. She suffered much from pain in the back, abdomen, chest and limbs. She complained bitterly that she could not use her arms because of the pain in the joints and muscles. Her legs also became affected, and wasting accompanied the weakness. She was extremely miserable and anxious. Sleeplessness required hypnotics. On one occasion she complained of double vision and bad sight. At times she was mentally confused. The pulse was rapid, varying in rate from 88 to 156 per minute, but the temperature remained normal. The urine varied in colour from time to time. In June she suffered from an attack of pneumonia which was slow in resolving. By August she had lost three stone in weight and was emaciated. In September she returned home at her mother's request.

The remaining eighteen months of her life reiterated the same melancholy story, interrupted only by temporary remissions. She was in and out of hospitals. In March, 1944, the urine was dark and a good deal of pain necessitated the use of morphine. During another stay in hospital from April to July, 1944, she complained of severe pain, wasted considerably and was pale, and she generally had a rapid pulse. She appeared on several occasions to be at the point of death. The condition of the urine changed in cycles. After her return home in July she had congestion of the lung with blood-stained sputum.

In November and December, 1944, she showed considerable improvement—was able to get about the house, play the piano and so on. But this remission was followed inexorably by relapses, and eventually she died on March 31, 1945. In the final illness she was weak and wasted and complained of constant pain in the lower part of the abdomen. A tumour about the size of a hen's egg was palpable; it appeared to be in the transverse colon and may possibly have been spastic in nature. Morphine was the only treatment that relieved the pain and insomnia. Vomiting was frequent. The temperature ranged from normal to 37·7° C. (99·8° F.), the pulse rate from 100 to 140 per minute. During the whole eighteen days of her final stay in hospital the urine was port-wine coloured and contained albumin. No post-mortem examination was made.

No opportunity has arisen to examine for latent porphyria the immediate relatives, who comprise father, mother and brother.

Discussion.

These two cases illustrate many of the characteristic features of acute porphyria.

Both patients exemplify the predominance of abdominal and nervous symptoms—severe abdominal pain, limb pain suggestive of polyneuritis and symptoms referable to toxic action on the central nervous system.

In both cases there was some difficulty at first in making a diagnosis. Once the urine was studied the diagnosis became obvious. The difficulty in recognizing the disease would be much greater in those cases in which the urine is normal in colour when passed, especially if the symptoms are vague, as is likely in the earlier attacks. The severity of the abdominal symptoms led to the performance of laparotomy in Case II, as well as in many cases reported in the literature.

Both cases emphasize that the immediate prognosis in an acute attack may be serious, especially if neurological manifestations develop. The first patient died in the first attack recognized as porphyria, after an illness of about twenty-five days. It is likely, however, that much of her ill health in the preceding ten months or more was due to the same cause. It is even conceivable that porphyria was responsible for the illnesses of thirteen years and six years before. In Case II the diagnosis was made in the first clinical attack. Previously there had been a period of latent or mild porphyria. The subsequent course was marked by progressive but irregular deterioration till death ensued twenty-three months later.

Yet perhaps this paints too gloomy a picture. Although these two cases ended fatally, it was their very severity that brought them to notice. There may well exist in the community a number of mild cases, and we know that the latent phase can be prolonged. Such mild and latent cases could easily be overlooked. One of Waldenström's patients was still living twenty-seven years after the disease appeared clinically. The mother of the first patient, herself a probable sufferer, has reached the age of fifty years.

There is no evidence that the attacks in either case were induced by drugs, but the possibility cannot be excluded. After the symptoms had begun a great variety of drugs, particularly sedatives, was prescribed.

Summary.

Acute porphyria is a serious, recurrent episode in the course of a chronic disorder of porphyrin metabolism. The specific diagnosis is made by the demonstration of the abnormal passing of porphyrins in the urine.

The disease is rare, yet possibly not so rare as the scarcity of reported cases would suggest, for in mild and latent cases the condition is not easy to diagnose unless special attention is paid to the examination of the urine. In this connexion the Watson-Schwartz test is valuable.

Two cases of acute porphyria are here described; both patients were young women. The outstanding symptoms were severe abdominal pain, pain in the limbs, insomnia, mental and emotional disturbances, tachycardia and loss of weight.

Both cases ended fatally. One patient died in the first recognized attack; there had been at least ten months' previous ill health. The other died twenty-three months after the first obvious attack.

One patient probably derived the porphyria by heredity from her mother.

Acknowledgements.

As this is the first report to be published under the auspices of the Queensland Institute of Medical Research it is fitting here to express appreciation of the action of the Government of Queensland, and in particular of the

Honourable T. A. Foley, Minister of Health and Home Affairs, in its establishment.

I am indebted to Dr. J. Coffey, Acting Director-General of Health and Medical Services for Queensland, for permission to quote the results of examinations made in the laboratory of the Department of Health and Home Affairs; to those clinicians who carried the responsibility of the care of the patients and who have freely made their notes available—Dr. J. Bostock, Dr. N. V. Youngman, Dr. A. D. D. Pye, and Dr. S. Julius of Brisbane, Dr. W. G. Livingstone of Murwillumbah, New South Wales, Dr. S. J. Minogue of Rydalmere, New South Wales, Dr. J. E. Alexander and Dr. W. C. Day of Gayndah, and Dr. R. S. McGregor of Maryborough; also to Mr. S. B. Watkins, M.Sc., and Miss M. Chalk, B.Sc., for assistance in the chemical examinations.

References.

(1) C. J. Watson and S. Schwartz: "A Simple Test for Urinary Porphobilinogen", *Proceedings of the Society for Experimental Biology and Medicine*, Volume XLVII, June, 1941, page 393.
(2) S. Nesbitt: "Acute Porphyria", *The Journal of the American Medical Association*, Volume CXXIV, January 29, 1944, page 286.
(3) S. Nesbitt and C. H. Watkins: "Acute Porphyria", *The American Journal of the Medical Sciences*, Volume CCIII, January, 1942, page 74.
(4) F. G. Chandler, G. A. Harrison and C. Rimington: "Clinical Porphyrinuria with Report of a Case of the Acute Idiopathic Type", *British Medical Journal*, Volume II, December 16, 1939, page 1173.
(5) G. A. Harrison: "Chemical Methods in Clinical Medicine", Second Edition, 1937, page 216.

A NOTE ON THE USE OF PENICILLIN IN THE LABORATORY DIAGNOSIS OF WHOOPING-COUGH.

By PHYLLIS M. ANDERSON,[1]

From the Department of Bacteriology, University of Sydney.

DURING an epidemic of whooping-cough in 1941 it was shown that to swab the naso-pharynx of the patient and rub the swab on Bordet-Gengou medium was more convenient than the traditional cough plate method and gave reliable results in the bacteriological diagnosis of whooping-cough.(1) However, it was realized at the time that if only a few causal organisms were present their detection would be difficult, because faster-growing commensal organisms would also be picked up by the swab and would overgrow *Hæmophilus pertussis*. Fleming pointed out some years ago the value of penicillin in the isolation of *Hæmophilus influenzæ* from the throat,(2) and Maclean(3) adapted this method for the isolation of *Hæmophilus pertussis*. Both these workers used the crude broth filtrate, which had not at that time been standardized. Cruickshank in 1944(4) described a method of using standardized penicillin in the bacteriological diagnosis of whooping-cough.

The occurrence of an epidemic of pertussis in Sydney during the winter of 1945 provided an opportunity for testing such methods.

Technique.

Glycerol-potato-agar medium is prepared as follows.

Five hundred grammes of peeled potato are passed through a mincer and added to one litre of distilled water, then 40 millilitres of glycerin are added. The mixture is heated in the steamer for one hour. It is then placed in a press and the liquid is extracted. To each 500 millilitres of extract, 1,500 millilitres of 0·6% saline solution and 50 grammes of agar powder are added. The medium is then distributed in amounts of 80 millilitres in flasks, and sterilized by being heated in the steamer on three successive days.

Horse blood is collected with aseptic precautions, defibrinated and stored in tubes containing approximately 10 millilitres. Samples should not be more than three weeks old. Horse blood is recommended because hæmolysis of the horse corpuscles aids in the recognition of the pertussis colony.

A sterile stock solution of penicillin containing 10,000 units per millilitre is stored in the refrigerator. It can be used for three weeks. A fresh dilution in saline solution, containing 10 units per millilitre, is made when required.

The plates are prepared as follows. A flask of potato-glycerin-agar is melted and cooled to 45° or 50° C. To it are added 2·7 millilitres of the freshly diluted penicillin solution and 8 millilitres of defibrinated horse blood. The contents of the flask are well mixed and plates are poured, approximately 15 millilitres of medium being required for Petri dishes nine centimetres in diameter. Control plates of similar medium without penicillin are made. All plates are used on the day of preparation.

Plates are incubated aerobically at 37° C. in covered jars with moistened filter paper at the bottom, and observed after three, four and five days' incubation. Colonies of *Hæmophilus pertussis* are small, smooth and glistening, with a surrounding zone of hæmolysis.

Clinical Material.

By the courtesy of Dr. Blows, Out-Patient Registrar of the Royal Alexandra Hospital for Children, swabbings were taken from 154 unselected patients attending the whooping-cough clinic for the first time. A sterile fine wire swab (18 gauge copper wire with a looped end carrying a small dressing of cotton wool) was passed through the inferior meatus of the nose on to the posterior pharyngeal wall on each side. The swabs were rubbed first on a plate of Bordet-Gengou medium, then on a penicillin plate.

Results.

In the preliminary observations, on which was based the technique described above, it was found that pure cultures of *Hæmophilus pertussis* grew well on Bordet-Gengou medium to which had been added penicillin to give a final concentration of 0·3 unit per millilitre. When the concentration was raised to 0·5 unit per millilitre, the colony was smaller and hæmolysis appeared more slowly than on the penicillin-free medium. While a concentration of 0·3 unit of penicillin per millilitre of medium did not inhibit the growth of *Hæmophilus pertussis*, this amount was sufficient to suppress the growth of the normal flora of the naso-pharynx. The results of examination of 154 patients are shown in Table I.

TABLE I.
Results of Examination of 154 Patients.

Medium.	*Hæmophilus pertussis* Found.	*Hæmophilus pertussi* Not Found.
Bordet-Gengou medium	39	115
Bordet-Gengou medium with penicillin ..	79	75

These figures proved clearly the value of adding penicillin to the medium, and the appearance of the two sets of plates was just as convincing. Often there was practically a pure culture of *Hæmophilus pertussis* on the penicillin plate, a phenomenon never seen on the Bordet-Gengou medium. As might have been expected, if only a few colonies were present on the penicillin plate, the corresponding plate of ordinary medium gave a negative result, owing to the masking effect of the faster-growing normal flora.

Discussion.

The method described above differs in two respects from that of Cruickshank. He passes the swab through the mouth, behind the uvula to reach the posterior pharyngeal wall; in a young child I have found it easier to pass the swab gently along the inferior meatus of the nose to the same area. Also I have obtained more consistent results

[1] Work done with the aid of a grant from the National Health and Medical Research Council.

by incorporating the penicillin in the medium before pouring the plates than by Cruickshank's method of spreading it over the solidified medium.

The bacteriological diagnosis of whooping-cough, so useful in the catarrhal stage of the disease when clinical diagnosis is impossible, has not come into general use in this country; but the introduction of the naso-pharyngeal swab into the clinic and the penicillin plate into the laboratory should remove the main objections to its establishment as a routine procedure.

Summary.

A method for incorporating penicillin into culture media for the isolation of *Hæmophilus pertussis* is described. *Hæmophilus pertussis* was isolated from 79 of 154 patients by means of the penicillin plate method, and from only 39 of them when ordinary medium was used.

References.

(1) P. M. Anderson: "A Note on the Cultivation of Hæmophilus Pertussis", THE MEDICAL JOURNAL OF AUSTRALIA, Volume II, August 30, 1941, page 224.
(2) A. Fleming: "On Antibacterial Action of Cultures of Penicillin, with Special Reference to their Use in Isolation of B. Influenzæ", *The British Journal of Experimental Pathology*, Volume X, 1929, page 226.
(3) I. Maclean: *The Journal of Pathology and Bacteriology*, Volume XLV, 1937, page 472.
(4) R. Cruickshank: "Postnasal Swab in Diagnosis of Pertussis", *The Lancet*, Volume I, 1944, page 176.

EPIDEMIC POLYARTHRITIS.

By P. G. DOWLING,
Major, Australian Army Medical Corps.

Two small epidemics of a disease characterized by painful and swollen joints, a rash, mild fever and adenitis have been described in THE MEDICAL JOURNAL OF AUSTRALIA. Halliday and Horan[1] gave an account of 105 cases among troops in the Northern Territory between November, 1942, and January, 1943. Sibree[2] reported 28 cases in a military unit in Queensland in late February and early March, 1944. The present report deals with a series of cases having similar features, which occurred among troops of an Australian division in North Queensland during February, March and April, 1945.

Distribution.

All the patients were members of military units which were in camps extending along both sides of a road for a distance of about seven miles. There were 94 patients in this area between February 26 and April 8, 1945; 86 of these were found in five units in close proximity to one another at one extremity of the area, 47 patients being examined in one unit alone. A distance of not more than three-quarters of a mile separated any two units of this group. Of the remaining patients, five were examined in units situated two to three and a half miles away from the above-mentioned group, and three in units five to seven miles away. Thirty-three of the patients were evacuated to a casualty clearing station, the remainder being treated in their own units.

Clinical Features.

The following description is based on the symptoms and signs presented by the 33 patients admitted to the casualty clearing station, supplemented by observations made in the unit in which 47 cases occurred.

Onset.

The onset was nearly always gradual, with pain on movement of the wrists, fingers and feet. Frequently the patients complained of "pins and needles" on using their hands or on walking. In some the shoulder joints, knees or ankles were first affected, while others first complained of lumbar backache. Mild headache, nausea and vomiting were early features in a few cases. One patient only complained of pain on movement of the eyes. In about half the cases a rash was present on the first day of the illness.

Arthritis.

Pain and stiffness in the joints were common to all patients. The pain was not severe, but was worse on movement. The joints of the hands and feet were most often affected, then the wrists, knees and ankles. Swelling in the region of the joints was observed in about three-quarters of the cases, the interphalangeal and metacarpophalangeal joints of the hands and the metatarso-phalangeal joint of the great toe being most frequently involved. Swelling of the wrist and ankle joints occurred also, and in three cases there was effusion into one knee joint. In all cases several joints were affected by pain or swelling; but the involvement was not necessarily bilateral or symmetrical. The joint swellings persisted for from four to seven days. Though pain usually disappeared a few days after the swelling had subsided, three patients complained of joint pain for three months after the onset of their illness.

Exanthem.

A rash was present in about nine-tenths of the cases. It appeared either on the first day of the illness or up to seven days later. It was usually first noticed on the trunk, and within a few hours had spread to the upper and lower limbs. Some patients displayed a generalized rash, the trunk, limbs, face and scalp being affected. The eruption was papular and discrete, except on the palms of the hands and the soles of the feet, where it was macular. In some instances the papules were large and sparse, in others small, numerous and closely set. They varied in diameter from one-eighth to three-quarters of an inch. When the rash first appeared, the papules and macules were usually bright red in colour, becoming a deeper red after twenty-four hours and gradually fading. The duration of the rash varied from two to seven days, the average being four days. In four cases small vesicles developed on the papules within twenty-four hours of the appearance of the rash, and these patients were first thought to be suffering from varicella. As the eruption began to fade in twenty-four hours and pain and swelling developed in the joints, the original diagnosis in these cases was seen to be incorrect. In five other cases the eruption on trunk and limbs was macular rather than papular and closely resembled that of rubella. Three patients complained that the rash was mildly irritable. In twelve cases reddening of the fauces was present, but there was no complaint of sore throat.

Fever.

In some cases no rise of temperature was recorded. The majority of patients had a mild degree of fever (temperature 99° to 101° F.), though in one case the temperature reached 103° F. and in another case 102° F. The pyrexia lasted from two to five days and subsided irregularly. The course of the fever in most cases ran parallel to that of the rash.

Adenitis.

About half the patients had mild tenderness and enlargement of the lymph glands. In some of these cases the cervical, axillary, inguinal and epitrochlear glands were involved, while in others only one or two groups were affected. The glands remained tender for three or four days.

Investigations.

In eight cases only throat swabs were examined, culture of pathogenic organisms from the blood was attempted, and total and differential leucocyte counts were made. From one throat swab a hæmolytic *Staphylococcus aureus* was isolated, but the other swabs yielded no pathogenic organisms. All the blood examined was sterile. The leucocyte counts gave normal results, the total number of cells ranging from 6,350 to 10,800 per cubic millimetre, the percentage of each type of cell being normal.

Disability.

Of the 47 patients examined in one unit, 36 were off duty for periods of four to fourteen days, and subsequently were free of symptoms. The remaining eleven patients had joint pains, mainly affecting the lower extremities, which persisted for more than two weeks after the onset. Their main disability was pain on walking. Three of these patients complained of painful joints for three months after the illness began. In reply to inquiries made in September, 1945, these three patients, who were then serving under tropical conditions, stated that on cool mornings they still occasionally had joint pain.

Treatment.

As the illness was mild, and as in most cases pain and swelling disappeared spontaneously within a few days, it was considered sufficient to keep the patient in bed during the febrile period and to provide rest for his affected joints. Analgesics such as aspirin appeared to relieve pain, but it was doubtful whether sodium salicylate had any beneficial effect on the course of the illness.

Discussion.

The patients in this series of cases were undoubtedly suffering from the disease tentatively named acute polyarthritis by Halliday and Horan. During the epidemic described by them I had the opportunity of seeing some of their patients and can state that there was close similarity in the clinical features and course of the illness in both outbreaks. Reviewing the article by Halliday and Horan, Megaw[3] comments as follows:

> This appears to be yet another of the short fevers that are cropping up in military camps in various parts of the world. Most of them seem to be more nearly related to dengue than to any of the other classical diseases. Information with regard to the epidemiology of the disease is scanty. The name acute polyarthritis is likely to suggest a more serious form of disease than that described, especially as there was no swelling of the joints in mild attacks in the present series.

The outstanding feature of this disease is the multiple joint involvement. In this series there was complaint of pain in all cases, and in the majority the affected joints were swollen. The swellings were periarticular in most cases, while in some effusions within the joint cavity could be demonstrated. It would seem, then, that the disease is correctly described as polyarthritis. The joint involvement is mild, but may sometimes be prolonged, though no cases of permanent disability have been encountered. This disease first attracted attention through the occurrence of sporadic cases in the Northern Territory, but its epidemic nature is now well established. It is suggested, therefore, that confusion with other and more serious forms of polyarthritis may be avoided by naming this disease epidemic polyarthritis.

In both the previous articles describing epidemics of this disease the writers have discussed its relationship to dengue fever. While admitting that there are some features in common, they point out that this syndrome differs in many respects from dengue fever, and conclude that it is a separate disease. I am in agreement with that view. Prior to and during the present epidemic no cases of typical dengue fever had been encountered among troops in the area. The differential diagnosis from rheumatic fever, rubella, glandular fever and varicella does not require repetition. The combination of joint involvement, a papular or macular rash and pyrexia suggested the possibility of a meningococcal infection; but the course was much milder, no recurrence of fever or rash has been observed, and no meningococci have been found on cultural investigation.

The ætiology and mode of transmission of epidemic polyarthritis are unknown. Search for an infecting organism has so far proved fruitless. Halliday and Horan were unable to obtain positive results in cultural investigations of blood, tonsils and naso-pharynx, urine and stools. Professor E. Weston Hurst[4] inoculated rabbits, guineapigs, mice and developing hens' eggs with defibrinated blood and citrated joint fluid from three patients in the Northern Territory "without producing signs of disease either clinically or on pathological examination".

Epidemics have now occurred in three successive "wet" seasons in northern Australia. The present outbreak began about two weeks after heavy falls of rain had converted into swamps much of the area in the neighbourhood of the five units in which 86 cases occurred. At the time the first patients "reported sick" it was noticeable that mosquitoes had become much more numerous since the heavy rain. Until about seven days after the first cases occurred, the majority of the members of the units involved did not sleep under mosquito-nets. Anti-mosquito measures were instituted, including the draining and oiling of pools, the spraying of tents and the use of mosquito-nets at night. The incidence of new cases declined rapidly after the first two weeks of the epidemic, the decline commencing about seven days after measures for mosquito control had begun. Captain W. D. Pryor made a survey of the larval and adult mosquitoes in two of the units most heavily affected, and in one unit five miles away, where only one case had occurred. *Culex fatigans* was the only species present in both larval and adult forms in all three camps. Other larvæ found included those of *Aëdes notoscriptus*, *Aëdes alboannulatus* and *Culex lutzia halifaxi*. Adult forms of *Anopheles annulipes* were found in two of the camps, and of *Culex lutzia halifaxi* in one. By far the greatest numbers of larvæ and adults found in all three camps were of the species *Culex fatigans*. Sibree records that culicine mosquitoes were present in the camp area in which his cases occurred. Owing to movement of troops from the area soon after the onset of the present epidemic, it was not possible to carry out any experiment to establish whether the disease could be transmitted by mosquitoes or whether this was the natural means of spread. Other possible insect vectors were considered, but none were prevalent in the area at the time.

The cases were scattered throughout the units concerned, and there appeared to be no evidence of spread by contact, or through the use of common tents, kitchens, mess huts or latrines.

It is of interest that the unit in which Sibree's cases occurred was, at the time of the present outbreak, situated about one mile from the group in which 86 cases occurred. This unit had moved into the area some months previously, but no cases of epidemic polyarthritis had been observed amongst its members since the epidemic of early 1944, nor did any cases occur during the present epidemic.

Acknowledgements.

I wish to thank Major A. E. F. Shaw for his assistance in the preparation of this paper. The Director-General of Medical Services has kindly granted permission to publish this article.

Summary.

1. An epidemic of 94 cases of epidemic polyarthritis occurring in North Queensland in the "wet" season is described.

2. The patients were suffering from the disease to which Halliday and Horan gave the name "acute polyarthritis".

3. It is suggested that "epidemic polyarthritis" is a more suitable name for this disease.

4. The ætiology is unknown, but the possibility that this disease is a mosquito-borne infection requires investigation.

References.

(1) J. H. Halliday and J. P. Horan: "An Epidemic of Polyarthritis in the Northern Territory", THE MEDICAL JOURNAL OF AUSTRALIA, Volume II, October 9, 1943, page 293.

(2) E. W. Sibree: "Acute Polyarthritis in Queensland", THE MEDICAL JOURNAL OF AUSTRALIA, Volume II, November 25, 1944, page 565.

(3) J. W. D. Megaw: *Bulletin of War Medicine*, Volume IV, April, 1944, page 476.

(4) J. H. Halliday and J. P. Horan: *Loco citato*, page 295.

Reports of Cases.

MOULDS IN THE LUNGS.

By J. B. CLELAND,
Marks Professor of Pathology, University of Adelaide.

As several examples of the occurrence of the growth of moulds in the lungs have come under my notice recently, it seems worth while to record or recall the following cases of my own, in the hope that some other cases will also be reported.

Mycelium of a Mould in the Lungs of a Child.

A little girl, D.K., aged five years, was admitted to the Adelaide Children's Hospital on January 13, 1945, under the care of Dr. T. Grant, to whom I am indebted for the clinical notes. She was said to have suffered from whooping cough followed by bronchopneumonia, and was admitted to hospital with surgical emphysema of the upper part of the chest and neck. She had agranulocytosis on her admission to hospital, having received some sulphonamide drug. There was no response to penicillin, blood transfusions or injections of "Pentnucleotide". The child sank and died, the exact nature of the condition being in doubt.

Autopsy showed that in the posterior half of the upper lobe of the right lung there were consolidation and redness and a number of scattered circumscribed pale areas, one millimetre to one centimetre in size, which were firmer than ordinary abscesses, but did not look quite like tuberculous caseation. The lower lobe of this lung was also red with pale nodules, and some small, solid areas were felt in the anterior portion of the lung. The upper lobe of the left lung was mottled and pale, with scattered specks and larger pale areas. There was a little yellow exudate on the surface of the right lung. Cloudy swelling of the kidneys and liver was present, and the marrow in the shaft of the femur was red. Cultures prepared at the Children's Hospital yielded a growth of pneumococci, and those prepared at the Institute of Medical and Veterinary Science yielded a growth of *Streptococcus fæcalis*, a non-hæmolytic staphylococcus, a green zone streptococcus and a Gram-negative bacillus. In sections of the lung were seen large necrotic areas traversed by the large hyphæ of a mould. In the necrotic areas nuclear staining was lost. With the mould were some masses of dark granules, either cocci or foci of commencing calcification; these granules were numerous around the edge. Nuclear debris was also present. The hyphæ formed a dense, felted network in places. In the alveoli surrounding the mycelial areas was a shrunken pneumonic exudate, apparently consisting of altered fibrin with a number of mononuclear cells; evidently pneumonia had been present and the exudate had tended to organize.

Comment.

Evidently at some stage of the child's illness, either after the development of bronchopneumonia or as the primary cause of her illness, the spores of one of the higher fungi had been inhaled and had found a suitable medium in which to multiply and produce the large lesions that developed and evidently contributed materially towards the child's death. The house where the child lived was visited, and some of the rooms were found to be damp and mouldy.

Small Sclerotia in the Wall of a Bronchiectatic Cavity.

A male patient, aged seventy-four years, who died in the Royal Adelaide Hospital from intestinal obstruction (autopsy Number 109/44) was found to have a series of intercommunicating bronchiectatic cavities in the upper lobe of the right lung. The walls were smooth, and lining one was some whitish, crusty material, thought possibly to be a mould. The surrounding lung tissue was dense and fibrotic. Microscopic examination revealed, attached to the wall but not penetrating the tissue appreciably, several small, densely compacted, rounded or oval mycelial masses (sclerotia), staining deeply with the hæmotoxylin and readily seen with a hand lens, measuring about 260μ by 166μ or 170μ (rounded); the hyphæ round the edge were about 4μ thick (see Figure I).

FIGURE I.
Drawing showing sclerotia in cavity of lung.

A Cavity in the Lung Containing a Large Compact Mass of Felted Mycelium.

This case was described in the *Medical and Scientific Archives of the Adelaide Hospital*, Number 11, for the year 1931, at page 14. The patient was a woman, aged twenty-three years, who had suddenly coughed up a large quantity of blood. The day after her admission to hospital she had a second sudden and severe hæmorrhage, and appeared to drown in her own blood. Five years previously she had also had hæmoptysis, and still another two years previously. A free mass, measuring about three inches by one and three-quarter inches in diameter (7·5 by 4·3 centimetres), was present, in a cavity in the upper and back part of the lower lobe of the right lung. The mass, which was surrounded with blood, easily fell out of the cavity in which it lay, and microscopic examination showed it to be composed of dense felted threads of fungus mycelium. This condition appears to be an entity, as Dr. J. B. Thiersch has shown me a similar specimen.

Aspergillosis of the Pleura with Sclerotium Formation.

This case, the patient being a returned soldier from the last war, was described in this journal on June 28, 1924. In this case the fungus was fruiting, and small, firm, brownish granules, about 1·5 or 2·0 millimetres in diameter and forming sclerotia, were present.

Reviews.

NEUROSURGERY.

THE development and progress of neurological surgery during the past two decades is now well recognized. But to many it is synonymous with brain tumours only. To record its ever-widening field, Carl W. Rand has collected together

in book form[1] his lecture clinics to students on some fifty-four different disorders. Written in simple conversational style, this book is easy to read and gives the general surgeon, general practitioner and senior student the basic principles of diagnosis, investigation and treatment on the wide variety of subjects in which neurosurgery has become helpful. In these aspects lies its chief value, as obviously a book of this size and extent could not deal with the material under review thoroughly enough for the neurosurgical specialist.

The book is divided into four major sections. The first section, called the spine, opens with chapters dealing with cases of *spina bifida* and cranium bifida, which includes varieties of encephaloceles. The Arnold-Chiari malformation and the mechanism whereby it results in the production of a secondary internal hydrocephalus are well explained.

The chapters on spine and spinal cord injuries which follow give a good summary of the different types of injuries which may occur and of the principles governing their treatment, but it is surprising that no plates illustrating methods of reduction and retention by plaster casts or Crutchfield's callipers *et cetera* are included. And surely the "valuable sign" for localizing the injured vertebra by flexing the head and neck, with the patient lying supine, until pain is experienced, as outlined on page 56, is extremely dangerous advice and contrary to the first-aid instructions of the next paragraph. The important and rarely recognized surgical emergency of spinal compression by an epidural abscess, metastatic from some staphylococcal infection, receives well-merited attention, and the chapter devoted to herniated intervertebral disks and associated lesions covers satisfactorily most aspects of their vexed and variegated problems in diagnosis and treatment as well as explaining their symptoms and signs. The concluding chapters in this section deal with cord tumours, whose common syndromes are well illustrated by histories of typical cases.

The second section dealing with head injuries is probably the best section of the book. Nearly every aspect of this important branch of neurosurgery is touched upon, including medico-legal and compensation problems. The author is a strong advocate of rest as the most important single measure in therapy, and whilst pointing out that no two cases are alike in this respect, he insists on rest in bed in hospital until the patient is symptom-free. He admits that the question of sedation is a difficult one, but he very rightly condemns the *pro re nata* ordering of morphine and advocates the barbiturates, paraldehyde and chloral, as far safer and more effective. On the other hand, most neurosureons would hesitate to accept his advice given on pages 144 and 145 when dealing with compound comminuted depressed fractures to "save the fragments, replace them and allow them to unite". Although skull defects are given high disability ratings in the industrial insurance world and with the laity, yet the chances of infection must be considered great despite the advent of sulphonamides and penicillin. The repair of skull defects is advocated and discussed, but no mention is made of the use of bone grafts from the inner table of the ilium, which have been used with such good results in this country by Pickerill, Money and others.

The differential diagnosis between the post-traumatic concussive state and the post-traumatic psychoneurotic state (hysteria and functional neurosis) is well discussed at some length, after the pathological physiology and histopathology of cerebral contusion have been dealt with in accordance with his colleague Courville's excellent work on these subjects. Subdural hæmatoma receives the attention it deserves in a separate chapter, but not all cases of this oft unrecognized condition can be dealt with successfully by simple drainage. Post-traumatic epilepsy, fat embolism, pneumocephalus, arterio-venous aneurysms and enophthalmos are all given short chapters in this section, and finally attention is drawn to the various and interesting defects in the visual fields which follow certain cranio-cerebral injuries.

The third section, although called the brain, is devoted mainly to the various types of intracranial tumour, Cushing's and Bailey's pathological classification being followed. The author's remarks and advice upon the ill-fated *spongioblastoma* (*glioblastoma*) *multiforme* group of gliomata should be well digested by those contemplating neurosurgery. Attempts at their removal are always followed by failure, immediate or remote, and only bring disrepute to neurosurgery. More cases of these tumours have been incorrectly than correctly diagnosed.

The chapters which follow on pituitary tumour, acromegaly and Cushing's syndrome are well written and contain clear expositions of these fascinating syndromes; but, on the subject of treatment, most neurosurgeons would not agree with the last two sentences on page 362, namely: "We were told in no uncertain terms that the only reason we employed irradiation was because we were incompetent to perform a pituitary operation. That point of view has changed, and today the best clinics recommend primary irradiation in many types of pituitary tumour." Gliomata of the brain stem, porencephaly and colloid cysts of the third ventricle, though rare lesions, are well portrayed and the pitfalls in their diagnosis are stressed. In the chapter on glioma of the optic nerve, the lengthy discussion on contentious aspects of its histopathology, quoted verbatim from one of the author's monographs, is of academic interest only and could well be omitted. This section concludes with a chapter upon brain abscess.

The final section is a miscellaneous one, in which are discussed such diverse subjects as trigeminal neuralgia, phantom limbs, cervical ribs, torticollis, malignant exophthalmos, essential hypertension and sympathetic surgery for vascular diseases.

In the treatment of trigeminal neuralgia, indications for the various methods are well explained and some preference is expressed for medullary tractotomy as developed by Sjoqvist; whilst in the treatment of pain in phantom limbs, the injunction never to give morphine, as it always converts the patient into an addict, is heartily endorsed. In the final chapter, attention is drawn to coccidioidal granuloma of the central nervous system, a condition only recently recognized in the United States of America and not yet reported in Australia. It appears to represent, however, a definite clinical entity, which can be diagnosed by a skin test, akin to the tuberculin test in suspected cases of tuberculosis.

The book itself is excellently set out and printed on good art paper. The illustrations of specimens and the skiagrams are particularly well produced and appropriate to the subject matter. But their captions are in many instances far too lengthy and detailed, being repetitions of the text of the chapter concerned. Indeed throughout the book there is a lot of repetition, which could quite safely be omitted without the sacrifice of any of its teaching value.

As in most first editions, the text abounds in misprints and anomalies where the wrong side of a lesion or sign is given and dates are confused in case histories. Anatomical errors also exist. The soleus muscle referred to on page 70 should be the psoas muscle; on page 245 the posterior cerebral artery is called a branch of the internal carotid artery; and in the chapter on acoustic nerve tumours the petrous ridge is called the sphenoidal ridge in the text of figure 98.

The captions at the beginning of each chapter are unusual and pleasing features. Each one is an appropriate excerpt from some classical work or monograph upon the subject under review. In many instances, these references date back many years, even to Fothergill's work in 1784, and not only pay tribute to famous, though oft forgotten, authors, but also serve to prove the old adage that there is very little new under the sun. Indeed throughout the book the historical and personal aspects of the various diseases and conditions discussed receive full and timely honour, and a valuable list of references for additional reading is given at the conclusion of each chapter.

[1] "The Neurosurgical Patient: His Problems of Diagnosis and Care", by Carl W. Rand; 1944. Springfield: Charles C. Thomas. 9" × 5½", pp. 588, with many illustrations. Price: $4.00, post paid.

MASSAGE AND MEDICAL GYMNASTICS.

THE third edition of "Massage and Medical Gymnastics", by Mary V. Lace, is essentially a book for students in which the basic principles essential for a proper understanding of the reasons for the various exercises are clearly set out.[1] Massage, which can be learnt only by practical demonstration and constant practice, is limited to the first 36 pages. As Miss Lace points out in her preface to this edition, the purpose of the book is restoration of function. The importance of active and resisted movements rather than passive treatment is well stressed. The muscles and joints involved are enumerated, the exercises and the position of the gymnast are explained, and the effects and uses are clearly set out. The book is well illustrated, and this helps the understanding of the text. To have a proper understanding of the structures involved the student should study a standard work on anatomy in conjunction with this book.

[1] "Massage and Medical Gymnastics", by Mary V. Lace, with a foreword by James Mennell, M.A., M.D., B.C.; Third Edition: 1945. London: J. and A. Churchill Limited. 8" × 3¼", pp. 255, with 126 illustrations. Price: 12s. 6d.

The Medical Journal of Australia

SATURDAY, FEBRUARY 23, 1946.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

AUSTRALIA AND SCIENCE: THE UNIVERSITY OF SYDNEY AND SCIENTISTS.

On Sunday, February 3, 1946, Professor Eric Ashby, of the University of Sydney, speaking as "Guest of Honour", gave over the National Broadcasting Network a talk which should be brought to the notice of every adult Australian. Professor Ashby has been away from Australia for over a year and has been attached to the Australian Legation at Moscow. He spoke of the interest shown by foreigners in matters Australian and also of their ignorance. Inquiries all had to deal with the intellectual life of Australia, the standard of education, the percentage of persons who received university training, the place taken by research in the life of the country, the presence of English students in Australia and so on. He pointed out that the people who gave Australia her reputation abroad were men of whom many Australians had not heard—a bacteriologist and a worker in wheat in Sydney, a biologist in Melbourne, a chemist in Adelaide, an historian, a medical man. People of this kind gave Australia her personality. At a meeting of the Society for Visiting Scientists in London Professor Ashby had heard a discussion on the organization of scientific work in Australia. The organization was described and some of Australia's accomplishments were mentioned. There were, however, a lot of "buts". One of them: "But the universities which in Britain are the springs of intellectual life, are [in Australia] so understaffed and overloaded with students, and criticized by fools, that they can't fulfil their proper function in the community." "Recently", Professor Ashby declared, "our stature as a nation has been greatly raised by our foreign policy and our diplomacy. But these alone are not enough. Before we can say we have a personality among nations we have a great decision to make. We must decide that we are no longer content to be the periphery of the intellectual life of the British Commonwealth; but that we shall be a centre, to which British students come, for some branches of knowledge and for some kinds of art."

We may take it for granted that no one will declare himself in favour of intellectual sterility for Australians, that no one in the Commonwealth will be content that Australians shall remain on the periphery of the intellectual life of the British Commonwealth. If Australia is to take her place at the centre, her people must live life to the full. This does not mean that Australians are to spend their whole time taking everything that life has to offer or can be made to provide for them. It means that they also have to make a contribution to the world's common fund of knowledge and to its accumulated store of culture. The contribution, moreover, will have to be commensurate with their endowment of gift and opportunity. It is not sufficient to be able to point to young men and women, beautiful physical specimens, bronzed by the sun and full of the joy of living, to glory in the feats of sailors, soldiers and airmen and in their devotion to the cause of freedom, or even to name with pride Australian scientists who in their thirst for knowledge and their search for truth have left our shores to achieve fame in the laboratories of other countries. To attain the objective of a full life Australia will need to pay more attention to education than she has done in the past; in so doing, moreover, she will find it imperative to use more discrimination, to adjust her sense of values in certain respects. The provision at universities of bursaries, exhibitions and "free places" is to be heartily commended. If any country is to develop and take its place beside others, the intellectual ability of its people must be given opportunity to develop. Those with the inclination and the necessary mental equipment to undergo scientific training should be allowed to follow their bent. This will result, and indeed has already resulted, in a great increase in the number of undergraduate students at Australian universities. The universities have to make provision for the greater call that is being made upon them. In making these provisions the universities have to be careful lest they think too highly of numbers—of quantity rather than of quality. It is quite simple to allow universities to degenerate to the level of technical schools where young men and women may take out licences that will enable them to follow this or that profession in life, where they may gain a veneer of knowledge that will allow them to pass for educated men and women. Universities should be seats of learning with two objects. The one is to turn out educated men and women with some ideas of citizenship, some sense of obligation to the community. The second is to foster the genius of the gifted student, to give him a chance to develop his talents, so that he will be able by study and research to add to the sum of knowledge. Students of this kind are the cause of the periodical moans in the daily Press when some Australian abroad has been responsible for or has had a share in a scientific discovery—"Why are these men not kept in Australia?" These are the men who will drag Australia from "the periphery of the intellectual life of the British Commonwealth" to the centre, if she is ever to reach that goal.

We may take it for granted that the controlling body of every university in Australia would, if faced with the question, agree that scientific subjects should be presented

to students by well-qualified and trained experts in such a way that imagination will be awakened and enthusiasm aroused and that talented students will show their latent qualities. In other words, Australian universities, on paper at least, have opinions on the teaching of science to which no exception can be taken. But they do not always put their opinions into practice. In the present instance we wish to draw attention to an action of the University of Sydney which must appear to all reasonable people concerned with the "periphery" of science and its "centre" as absurd, if not unintelligent. A new lecturer in bacteriology is required at this seat of learning. An advertisement that appeared in *The Sydney Morning Herald* called for applications for a "senior lecturer". A senior lecturer in bacteriology must necessarily be a person of high qualification and of ripe experience. Readers of this journal do not need to be reminded of the enormous range of the subject, dealing as it does with microorganisms in relation to disease and with reactions of the body to their invasion. The subject is the basis of preventive medicine and of the practice of internal medicine. A clinician with a good knowledge of immunology and bacteriology is thrice armed in comparison with one not so erudite. A senior lecturer must be capable of doing any of the work of the department and of taking the place of the professor during his absence from any cause. He would probably have the oversight of the junior members of the department's staff and at all times will take a large part in the teaching of students. For work of this standard the university offers the handsome salary of £600 *per annum*. Presumably university superannuation will have to be paid for, and when the Taxation Department has taken its share there will not be a great deal left. The professor of bacteriology receives a salary of £1,500 a year. The discrepancy between the two salaries is far too great. We understand that all senior lecturers at the University of Sydney receive £600 a year. Apparently what always has been in the matter of lecturers' salaries must remain. To suggest that the members of the Senate of the University of Sydney do not appreciate the situation would be absurd. One can only conclude that they have no faith in the rightness of their convictions or in the destiny of the organization entrusted to their administration. Clearly a larger salary will not alone ensure the attainment of all that we look for in this or any other department. A larger salary would be, however, a good *point d'appui*. If the Senate is so timorous that it will not move in regard to all senior lecturers, it may recognize that bacteriology is a subject of enormous importance in the medical curriculum and may choose to appoint a reader in bacteriology rather than a senior lecturer. A reader would be more highly paid than a lecturer. This action would get over any difficulty of discrimination in the relative importance of subjects; but if it originated in the Senate it would not show any real appreciation by the Senate of the need to overhaul the whole of the staff arrangements. Some people think that there is inspiration in mottoes. If this is so, the members of the university as a whole might set about securing a change of the university motto: *Sidere mens eadem mutato*. In a new motto *mens eadem* might be dropped and a place found for *mens progrediendi cupida*. The *mens eadem* will remain at the periphery of intellectual life; the *mens progrediendi cupida* will turn to the centre.

Current Comment.

PORPHYRIA.

THE condition known as porphyria is one of the many interesting pathological conditions occasionally confronting the clinician which is not thoroughly understood. E. H. Derrick's description of two fatal cases, published in this issue, should not be passed by. These were cases of what is known as the acute idiopathic variety. Derrick, it should be noted, includes the idiopathic form with the so-called toxic form, consequent on the taking of certain sedative drugs, and labels the two as the acute in contradistinction to the other, congenital, type. Since in cases of the idiopathic variety the taking of drugs as a cause can seldom be excluded, the classification adopted by Derrick would seem to be preferable to that in which "toxic" cases are put into a third type. Derrick does well to lay stress on the acute attack, for, as he points out, mild and latent cases occur and may be easily overlooked. Further, the latent phase may be prolonged, as shown by one of Walderström's cases, which Derrick quotes. In these circumstances the discovery of latent porphyria becomes a matter of practical importance. The chief manifestations of the acute attack, Derrick reminds us, are: the passage of reddish-brown urine; severe abdominal pain, associated usually with nausea, vomiting and constipation; and symptoms referable to the nervous system. The involvement of the nervous system, if we may judge from two recent communications,[1-2] is a profitable field for study. Denny-Brown and Sciarra base their article on two cases. In the first case the condition was manifested as an acute and transient "toxic delirium"; the second was one in which the more usual form of delayed neuritis was followed by recovery and a second fatal attack occurred two years later. The history of the first patient is interesting from the point of view of diagnosis. On his admission to hospital the patient had slight fever; he had a leucocytosis and delirium. His urine was dark brown in colour and contained porphyrins. It was subsequently discovered that he had passed dark-coloured urine every second or third morning for about two years. Two weeks before his admission to hospital his urine had become darker than usual and had remained dark. There was a history of alcohol, and it is pointed out by Denny-Brown and Sciarra that the condition might have been an exceedingly brief and benign attack of *delirium tremens*. If this condition was present, the occurrence of an attack of porphyrinuria was a striking coincidence. About the second case there was no doubt. The patient was a white male, aged thirty-two years. In December, 1942, he was admitted to hospital suffering from pains and cramps in the upper part of the abdomen. On several occasions during his stay in hospital he suffered from general convulsions. The muscles of the limbs and trunk became weak and for a while the patient was unable to feed himself. The urine was persistently amber coloured. On February 6, 1943, the patient was discharged from hospital. On March 10, 1944, he complained of a sore throat and abdominal pain and cramps appeared once more. On March 13 he was admitted to hospital for a second time. The urinary output was diminished and the urine was amber in colour. On March 23 the patient became drowsy and general convulsions occurred. The muscles of the upper limbs became weak and the weakness gradually spread to both lower limbs and the trunk. The patient rapidly went downhill. All motor power was lost. The tendon reflexes and superficial reflexes were lost. There was a good response to touch and pin prick in all parts, but vibratory sense was diminished at wrists and ankles. A mechanical respirator was used for three days, but the patient became more confused and irrational and died in coma on April 7, four

[1] D. Denny-Brown and Daniel Sciarra: "Changes in the Nervous System in Acute Porphyria", *Brain*, March, 1945, page 1.

[2] Nathan Roth: "The Neuropsychiatric Aspects of Porphyria", *Psychosomatic Medicine*, September, 1945, page 291.

weeks after the onset of the final attack. During the last four days of life the urine varied in colour from a deep orange to a burgundy red, and was found on being tested to contain porphyrin. A long account of the post-mortem findings is given and photomicrographs of nervous tissues of different kinds are reproduced. The point that is at once obvious is that the pathological changes were patchy. As an example we note that the posterior tibial nerve in one segment appeared entirely normal except for mild œdema of one fasciculus. In other pieces the myelin showed patches of beading and irregularity associated with œdema under the perineurium. Cell stains of such areas showed mild proliferation of Schwann cells and endoneurial fibroblasts with slight perivascular accumulation of mononuclear cells. This patchy disorder of myelin sheaths was accompanied by some thinning and irregularity of staining of the axis cylinders; there was no interruption. There was an absence of fibrillary sprouting of regenerating axis cylinders. At one level nearly every fasciculus showed œdema with lifting of the perineurium. At the borders of an area of damaged myelin an occasional myelin sheath that was otherwise intact showed an isolated gap of about 0·1 millimetre in length. The characteristic appearances of Wallerian degeneration were absent.

Before Denny-Brown and Sciarra's views on the neurological changes are mentioned, some reference must be made to their remarks on their two cases. They think that the rapid recovery from severe delirium described in their first case is paralleled by the extraordinary recovery from a severe paralytic episode of the second patient who returned to his occupation in between his two attacks. In this regard the "mysterious illness" from which Derrick's first patient suffered before her final illness is of importance. Amongst the ten cases quoted in detail in Roth's report is the history of a woman, aged twenty-nine years, who in the five years preceding her final illness had three similar attacks, all characterized by depression, insomnia, excessive fatigue, abdominal pain and paralysis of the upper and lower limbs. In one of Roth's cases also, that of a woman aged nineteen years, an attack of acute porphyria was superimposed on what appeared to have been a condition of congenital porphyria. Denny-Brown and Sciarra also mention particularly the excretion of porphyrins in the urine. Waldenström recorded a case in which porphyrins were absent in some attacks and appeared at a later date; he therefore held the view that porphyrins as such played a relatively unimportant part in the development of symptoms. Denny-Brown and Sciarra point out that in their first case the continued excretion of porphyrins occurred after the burgundy colour of the urine had disappeared. In their second case colour was absent until a late stage in the patient's illness. Six of Roth's ten cases were examples of what has been called "porphyria without porphyrinuria". Roth points out that the porphyrins alone are not responsible for the unusual colour of the urine, since it is altered very little by complete extraction of the porphyrins. Various other pigments which have as yet not been definitely identified contribute to the unusual appearance of the urine. These are said to include melanin, skatole, urofuscin and urobilin. Roth also quotes Waldenström as having pointed out that the pigment may be present in the form of a colourless chromogen. The problem of the clinician, anxious to make a diagnosis, may thus be difficult, and this difficulty makes it necessary to lay special stress on the clinical manifestations of the condition.

In regard to the pathological changes in the nervous system, Denny-Brown and Sciarra point out that their findings are identical with the patchy and slight affections observed by others. "When it is realized that the nerve trunk proximal and distal to each patch showed degeneration of only isolated fibres, and in many instances no change at all, one of the most remarkable features of the affection becomes manifest." In trying to interpret their findings Denny-Brown and Sciarra point out that the gaps in myelin at the nodes of Ranvier in the nerve roots are very similar to those described by Denny-Brown and Brenner in segments of nerve rendered ischæmic by pressure. Such widening of the node is also found as an early stage of Wallerian degeneration, but the other signs of this degeneration, such as fragmentation of the axis cylinder, were absent. The changes in the posterior tibial nerve, moreover, present other characteristics of a more severe degree of ischæmic lesion. In an experimental ischæmic lesion in which axis cylinders are preserved intact there is no change in the electrical excitability of the paralysed muscles. Denny-Brown and Sciarra observe that in reported fatal cases of paralysis with porphyria (including their own) the total duration of paralysis is usually too brief for the reaction of degeneration to occur. The lesions of central white matter and of the nerve cells were comparable to the ischæmic lesions of the peripheral nerve. The changes in the dorsal root ganglia were as advanced as those in the nerve cells, but there was no impairment of general sensation. Denny-Brown and Sciarra's general conclusion is that the primary damage to the nervous system in porphyria is not a degeneration, but an impairment of myelin compatible with the occurrence of widespread, patchy and intermittent ischæmia. They think that the search for a vasoconstrictor substance present in the circulating blood may be profitable in determining both pathogenesis and treatment.

Roth has some interesting ideas on the causation of porphyria. He refers to views of Günther that congenital and acute porphyria occurs in persons who have a constitutional anomaly of pigment metabolism. Among the characteristics of the congenital variety is a neuropathic constitution manifesting itself by ready irritability; among the stigmata of the acute condition are nervousness, psychic depression and insomnia. Roth quotes Waldenström's view that acute porphyria may be inherited as a Mendelian dominant. It is, he holds, the constitutional anomaly which is held responsible for cases of so-called latent porphyria, in which individuals excrete abnormally pigmented urine over long periods of time without presenting other clinical signs or symptoms of the disease. Roth's ten case reports make interesting reading; in addition to the features of the condition already mentioned, he names others which he thinks require emphasis. The disease, he holds, occurs with special frequency, if not exclusively, amongst people with severe, neurotic personality disorders. "The patients usually appear to be hysterical, except in those instances where organic brain disease clouds the underlying features of the personality." In seven of the ten cases reported by him there was a history of major psychosis or serious personality deviation in one or more members of the last three generations of the family. In two of the remaining three cases there was no opportunity to inquire into the family history, so that the incidence of mental disease among the relatives of the patients might have been even higher. Roth thinks it probable that psychoneurosis plays an important part in the pathogenesis of the disease and in determining the time of onset of the acute attack. He points out that psychosomatic medicine is replete with instances in which emotional factors influence the course of metabolic disorders.

At the outset of his article Roth disclaims any intention to delve into the biochemical problems involved in the study of abnormal pigments, or to discuss in detail the signs and symptoms other than those of a neurological or psychological nature. The reader is left with the idea that Roth looks on the condition as having a psychogenic origin. It is not clear whether Roth regards this psychoneurosis as setting in motion action by porphyrin or other substance. He might even be prepared to agree that the activating agent was a substance something like that postulated by Denny-Brown and Sciarra. If this were so, he would probably differ in his conception of what happens during the process, for he refers repeatedly to the neurological change as a degeneration. Denny-Brown and Sciarra postulate an "impairment of myelin" which may be a distinction without much of a difference. The scope for future work on this subject is obvious.

Abstracts from Medical Literature.

PÆDIATRICS.

Some Problems of Neo-Natal Life.

S. G. Ross (*The Canadian Medical Association Journal*, May, 1945) discusses the mortality rate at the Royal Victoria Maternity Hospital in Montreal in the past forty years. During the first twenty years of the period there was a gradual reduction in neo-natal mortality, whereas in the past twenty years the mortality rate has remained almost stationary at about 4%. In a recent year prematurity accounted for 50% of the deaths. Other important causes, which are discussed by the author, are intracranial hæmorrhage and cerebral anoxia, hæmolytic anæmia of the newborn and hæmorrhagic disease of the newborn. Premature infants born of a toxæmic mother have a poor survival rate. The high incidence of intracranial hæmorrhage in the premature infant is well recognized. The structural weakness in the supporting membranes of the brain and the blood vessels themselves are the primary condition for this accident. There is delay in blood coagulation which favours the prolongation of bleeding from a torn blood vessel. This is the result of the relatively low concentration of prothrombin in the infant's blood. The causation is probably diminished liver function. It is therefore good practice to administer vitamin *K* intramuscularly at birth to all premature infants in an attempt to control intracranial hæmorrhage if present. Lethargy and feeding difficulties associated with icterus may be present in the premature infant. One or more daily hypodermic injections of glucose saline solution may be useful. The author finds that some infants do not gain satisfactorily on breast milk. This is frequently due to a deficiency of protein of which the premature infant's requirements are high. In such cases they supplement breast milk by the addition of calcium caseinate, using one tablespoon to four to six ounces of breast milk. Forty to eighty millilitres of blood plasma subcutaneously at suitable intervals have been of value where satisfactory progress is not made. The plasma is rapidly absorbed and supplies protein to the infant. The author discusses subdural hæmatoma, which may produce immediate symptoms or remain "silent" for weeks or even months. It should be suspected in the case of any newborn infant who shows signs of increased intracranial pressure with a bulging fontanelle, vomiting and increasing size of head. Unexplained bouts of fever, irritability and difficulty in feeding are frequent symptoms. The risks of indiscriminate pre-partum anæsthesia and analgesia and their effect on the occurrence of cerebral anoxia in infants are stressed. The author emphasizes the importance of early diagnosis in hæmolytic anæmia of the newborn so that prompt blood transfusions can be given. The incidence of hæmorrhage in this condition is discussed and is regarded by the author as being due to liver damage and the low prothrombin content of the blood. Adequate vitamin *K* therapy is advocated. Hæmorrhagic disease of the newborn is dependent on the prothrombin factor in the coagulating mechanism. Asphyxia of the newborn apparently is a factor in the reduction of the prothrombin content of the blood. Asphyxiated infants are more prone to hæmorrhage than normal infants. A possible explanation is that experimentally produced anoxæmia may cause liver damage. This might result in diminished prothrombin formation. An important factor may be a lag in the formation of vitamin *K* in the intestine of the newborn infant, which is dependent upon the intestinal microorganisms in the bowel. The author always gives vitamin *K* intramuscularly in doses of five milligrammes to all premature infants, asphyxiated babies, babies who are born after a hard labour, and babies with hæmolytic anæmia, as well as to all infants showing spontaneous bleeding or signs of intracranial damage.

The Treatment of Rheumatic Fever with Penicillin.

L. A. RANTZ, W. W. SPINK AND P. BOISVERT (*The Journal of Pediatrics*, June, 1945) have recently treated with penicillin six young male adults suffering from typical rheumatic fever. Salicylates were withheld in every case but one until the efficacy of the antibiotic had been evaluated. Penicillin was administered intramuscularly at four-hourly intervals, appropriately diluted in sterile normal saline solution. In addition, cultures were grown from the nose and throat in the usual manner before, during and after penicillin therapy. Hæmolytic streptococci isolated each time were grouped and typed by the precipitin techniques of Lancefield. Immunological studies were carried out on the serum obtained from the patients at frequent intervals. Leucocyte counts of the blood of the patients were determined at least twice a week. A series of sedimentation rate estimations of the erythrocytes was carried out at appropriate intervals, the Westergren technique being used. Serial electrocardiograms made during the illness of each patient were also recorded. The authors state that it is not possible from a study of six cases to evaluate the usefulness of penicillin in the treatment of a disease whose course is as variable as that of rheumatic fever. The results, however, strongly suggest that it is not only of no value, but also may be harmful. In the first case recorded, the result would appear to be excellent, but this was an example of a mild form of the disease. The clinical course of the other five patients during penicillin therapy was not satisfactory. A second patient improved in that the temperature became normal and the pericarditis and arthritis decreased in intensity, but he did not recover during a period of observation of sixty days; his disease was then promptly terminated by the administration of salicylates. The administration of penicillin was associated in the other four with a progressive increase in the severity of their disease. All patients remained febrile; in three, pericarditis appeared; and in two heart failure became apparent. The sixth developed a severe tachycardia. In every case the alarming clinical state was rapidly controlled by the administration of salicylates. It is not clear whether four of these six individuals suffered initially from a severe rheumatic fever which progressed unchecked by salicylates, or whether their disease was aggravated by the administration of penicillin. If this small group is compared with a much larger one treated conventionally during the same season it seems very probable that the latter hypothesis is correct. Interesting theoretical considerations are raised by the availability of an agent such as penicillin which is actively bactericidal for the hæmolytic streptococcus and its application to the treatment of rheumatic fever. Although a close relationship exists between infection, particularly of the pharynx and tonsils, by the hæmolytic streptococcus of Group A and the development of the rheumatic process, no convincing evidence has been presented which would demonstrate these organisms to be present in any of the affected tissues peripheral to the naso-pharynx. It has therefore been necessary to postulate the development of sensitivity of the tissues to products of the streptococcus as to the appearance of an abnormal antibody response developed by the individual in response to infection with these organisms. Penicillin, in the light of these facts, might not be expected to accomplish more in the rheumatic subject than the elimination of the causative type of hæmolytic streptococcus from the tissues of the naso-pharynx. This result was obtained in every instance in this study. Had their presence been important to the continued activation of the disease, improvement should have followed this event. Its failure to do so strongly suggests that the hæmolytic streptococcus carrier state is not related to the continuing rheumatic process. One other possibility remains. The destruction of large numbers of hæmolytic streptococci in the naso-pharynx may have flooded the patient with unusual amounts of bacterial products and thus have been responsible for the severe clinical course observed in these patients. This possibility suggests that a clinical trial of penicillin therapy, adequate to eliminate the hæmolytic streptococcus from the naso-pharynx of rheumatic subjects who were fully protected by salicylates, may be in order. Since the clinical response to salicylates is usually excellent, any advantage inherent in the use of penicillin could be determined only by the study of a large group with adequate controls.

Penicillin Treatment of Oral Inflammations in Childhood.

M. B. MARKS (*The Journal of Pediatrics*, June, 1945) discusses the treatment with penicillin of three common and often severe inflammations of the mouth in infancy—namely, thrush, Vincent's angina and herpetic stomatitis. When these conditions are severe the usual armamentarium of drugs does very little in effecting an early cure. It is true that the old standbys, such as 1% or 2% solution of gentian violet, boric and peroxide irrigations, glycerite of boroglycerin, and sodium perborate, cure the vast majority of the simpler infections of this character in a reasonable number of days. However, in the severe or protracted cases of thrush or Vincent's infection, the usual treatment drags on for days and even weeks, wearing out the patience of both doctor and mother—and of the patient, too. It is in these instances that the use of penicillin is invaluable because of the rapidity with which it brings about an amelioration of symptoms. Penicillin may be used topically in

dilutions of 250 units per cubic centimetre in young infants or older children when it is not desirable to carry out the injection technique. Although this method seems a little slower than the intramuscular route, the results are as good as those produced by it, and certainly the method is more effective than the former procedures of using dyes, oxidizing reagents, and mild and strong antiseptics. The intramuscular route should be preferred in the administration of penicillin, especially in severe cases. It is seldom that more than four or five deep injections are required, and these can all be given within a period of twelve to fifteen hours. From an experience in treating a number of infants and children with the oral lesions described, the author is convinced that penicillin now supersedes all hitherto employed remedies as being the most reliable and effective.

ORTHOPÆDIC SURGERY.

Osteoarthritis as an Orthopædic Problem.

A. M. HENDRY (*The Practitioner*, August, 1945) considers that a reduction of the painful incapacity of osteoarthritis is one of the major problems of the orthopædic surgeon. The pathological processes of osteoarthritis are essentially degenerative and are the result of the wear and tear of joints by repeated small, actively produced traumata and by stresses and strains of long-continued use. Osteoarthritis affects chiefly weight-bearing joints and those used predominantly by occupation. It affects the elderly from prolonged use, the middle-aged and physically robust from excessive use. It appears at younger ages in joints ill adapted to withstand the effects of ordinary use, such as those affected by congenital abnormalities, and joints the surface of which have become distorted by gross trauma or earlier disease. Alterations in the line of incidence of stress and strain by *coxa vara*, knock knee, faulty alignment of fractures, bad posture and other causes of mechanical inefficiency, all tend sooner or later to its onset. The author considers that weight bearing is the chief exciting factor in the lower extremity, and occupational trauma in the upper limb. As the condition is degenerative, there is no power of recovery, but with adequate treatment progress may be arrested or at least retarded. Essentially mechanical in production, osteoarthritis demands mechanical treatment, both preventive and palliative. The valgoid feet of babies, static and postural deformities of childhood, all should be corrected early. In the treatment of fractures it should be recognized that rotation or angular deformities of even minor degrees upset the normal relationship of joint axes and are likely to be more harmful than greater degrees of opposition or overlap deformities. Local joint lesions, such as loose bodies, torn menisci and recurrent dislocations, should be treated early. The effects of such anatomical irregularities are obvious; less apparent, although of equal importance, are the errors of use of normal joints. Faults of weight bearing are widespread, and in themselves, as well as by augmenting occupational strains, are perhaps the most prevalent causes of osteoarthritis. The hip and knee are interrelated in weight bearing, flexion of one demanding flexion of the other. When full extension of the knee is not established, continued voluntary contractions of the quadriceps and glutei muscles are essential for the maintenance of posture. This leads to ready tiring, progressive weakness and an increasing lack of control of the joints. Body weight imparts a cross strain on a flexed hip and knee, which with a weakening control of the joint explains the high incidence of osteoarthritis is women, most of whom because of high heels or simply faulty habit fail to extend the knee fully on walking. Weakness of the quadriceps and gluteal muscles will lead to incomplete extension of the knee and hip. This is prone to occur from stretching or from disuse in relaxation in those whose occupation entails the maintenance of a flexed hip, knee and lumbar part of the spine for long periods, for example, miners, gardeners and heavy transport drivers. Similarly, almost every trade has its faulty posture or excessive use of certain muscles, so that the opposing muscles tend to become weak. A few minutes of each working hour should be directed to the performance of movements and assumption of positions opposite to those which the occupation demands. When clinical features of osteoarthritis become apparent, treatment may be by manipulation, external fixation or operation.

Air Arthrography in the Diagnosis of Torn Semilunar Cartilage.

E. G. HERZOG (*The Lancet*, July 7, 1945) states that the air arthrography method of investigation has proved useful in the diagnosis of cases of unexplained, repeated or chronic effusions, and also in cases in which operation had previously been performed elsewhere, leaving residual disability or recurring symptoms. The results in twelve cases were as follows. In six cases a torn internal semilunar cartilage was diagnosed from the films and the diagnosis was confirmed at operation; in three of these the patients had previously been operated on elsewhere. In one instance a tear was diagnosed, but a normal cartilage was removed at operation. In one case in which a diagnosis of a tear was made, the patient refused operation. In four cases no lesion was shown in the arthrogram; the patients were written to after six to nine months and were found to be well and doing heavy work. The author adopted the following technique. The patient's leg was prepared as for operation and the procedure was carried out in the theatre under full aseptic precautions. A number 20 needle was inserted into the suprapatellar pouch after injection of a little "Novocain". Any effusion would have been aspirated, but in all these cases aspiration was unnecessary, since the effusion had subsided after preliminary treatment. Air, filtered through several layers of gauze, was injected with a 20-millilitre syringe fitted with a three-way tap. The quantities used varied between 60 and 120 millilitres, but the author considered it best to be guided by the distension produced and by the amount of pressure needed to push home the piston. A collodion dressing was applied and a *crêpe* bandage was used to compress the suprapatellar pouch and to increase the amount of air in the joint. With the patient lying on his side, the line of the knee joint was marked under the fluoroscope. This was considered important because the beam had to pass exactly along the joint line if overlapping in the radiogram was to be avoided. Further, since this line by no means always runs at an exact right angle to the long axis of the limb, it cannot be estimated without screening. With the tube horizontal and the central beam passing through the knee tangentially, three views were taken of the cartilage. The joint should be opened by abduction (adduction when the external cartilage is suspected) of the leg over a sandbag. If other joint lesions are suspected the usual three views of the whole knee joint can be taken, antero-posterior, lateral and intercondylar. A film showing the retropatellar space will disclose *chondromalacia patellæ* if it is present.

Treatment of Malunited Colles Fractures.

J. S. SPEED (*The Journal of Bone and Joint Surgery*, July, 1945) concludes from a study of sixty cases of malunited Colles fracture, in which surgical procedures had been employed, that no one type of corrective procedure is applicable in all cases, but that the procedure must be chosen for each case, depending upon the exact lesion present. The first group was found by the author to include those patients in whom the deformity consisted chiefly of some dorsal tilting of the distal anticular surface of the radius associated with little or no radial shortening and with no appreciable involvement of the distal radio-ulnar joint. Such fractures were treated by simple osteotomy of the radius without internal fixation. In the second group were those cases of malunion with broadening of the wrist due to radial shortening and associated prominence of the ulnar head. Patients in this group were treated by osteotomy of the malunited radius at the old fracture site, and a resected oblique portion of the prominent ulnar head was utilized as a graft to maintain reduction of the fracture. In the third group malunion was more severe. Provided the distal articular surface of the radius was intact, patients in this group were treated by the use of a homogenous or autogenous intramedullary bone peg in order to maintain the reduction of the osteotomized radial fragments. In two cases in which internal fixation by means of an intramedullary peg failed to prevent recurrence of the deformity following osteotomy, the author used with success dorsal onlay grafts from the ulna. In the fourth group of patients in whom the radial fracture was situated close to the articular surface and in whom marked osteoporosis or severe comminution of the distal radial fragment was present, arthrodesis of the wrist was performed. In these cases resection of the distal end of the ulna was as a rule also necessary because of associated radio-ulnar disproportion and inferior radio-ulnar traumatic arthritis. The final group of patients had radio-ulnar traumatic arthritis only and were treated by subperiosteal resection of the distal end of the ulna. The author points out that, following surgical correction of a malunited Colles fracture, the surgeon must not be satisfied with an unstable reduction, for not infrequently recurrence of the deformity will take place in such cases. He advocates the use of some form of internal fixation, whether a bone peg or an inlay graft, in all but the simplest of malunions.

Medico-Legal.

HOCKING VERSUS BELL.

THE High Court of Australia on August 10, 1945, dismissed an appeal by Mrs. Stella Hocking, of Quirindi, New South Wales, against a judgement of the Full Court of New South Wales, which had by a majority verdict on August 3, 1944, set aside a verdict given by a jury in favour of Mrs. Hocking and had entered a verdict for Dr. Bell with costs. The verdict of the High Court was a majority verdict. The judgements of Mr. Justice Latham, Chief Justice, Mr. Justice Rich, Mr. Justice Starke, Mr. Justice Dixon and Mr. Justice McTiernan are published in full herewith.

The Judgement of His Honour Mr. Justice Latham, Chief Justice.

This is an appeal from an order of the Full Court of the Supreme Court of New South Wales setting aside a verdict for £800 for the appellant in an action claiming damages for negligence, and directing that judgement be entered for the defendant. The plaintiff, a married woman, claimed damages for negligence against the defendant, a surgeon, alleging that after performing the operation of thyreoidectomy he left part of a drainage tube in her neck, which remained in the neck until ultimately it came through the tonsil into the mouth some eighteen months after the operation. In the meantime, the plaintiff was seriously ill and suffered great pain.

There have been four trials before a judge and a jury of four. At the first trial there was a verdict for the plaintiff for £500. The Full Court set aside this verdict and ordered a new trial: see *Hocking* v. *Bell*, 42 S.R. (N.S.W.), 130. Leave to appeal from this order was refused by this court. At the second and third trials the jury disagreed, being evenly divided. After the third trial the defendant moved the Full Court for a verdict. The motion was dismissed: *Hocking* v. *Bell*, 43 S.R. (N.S.W.), 154, and a new trial was again ordered. At the fourth trial there was a verdict for the plaintiff for £800 and the jury made a specific finding in answer to a question submitted to them by the learned trial Judge. The Full Court unanimously set aside this verdict, and by a majority, Davidson and Halse Rogers, JJ. (Roper, J., dissenting) directed judgement to be entered for the defendant: *Hocking* v. *Bell*, 44 S.R. (N.S.W.), 468. It is from this order that the plaintiff now appeals to this Court. The trial lasted for 36 days, and the evidence given at the trial occupied nearly 1,400 pages of transcript. The testimony of the plaintiff and of witnesses for the plaintiff as to actual events was challenged by the defendant, and the expert medical evidence called by the plaintiff was also challenged. There was a conflict of evidence upon many matters.

In a trial by jury the jury is the constitutional tribunal for deciding issues of fact. As Lord Wright said in *Mechanical & General Inventions Ltd.* v. *Austin*, 1935 A.C., 346, at p. 373: "The appellate Court is never the judge of fact in a case where the constitutional judge of fact is the jury." Where there is a conflict of evidence it is not for the judge at the trial, or for any tribunal on appeal, to determine which witnesses should be believed—that is the responsibility of the jury.

If a verdict is against evidence and the weight of evidence, a new trial may be ordered. If the evidence on one side so greatly preponderates over the evidence on the other side that it can be said that the verdict is such as reasonable jurors, understanding their responsibility, could not reach, a verdict may be set aside and a new trial may be ordered. Caution is necessary in applying the principle that a verdict may be set aside if it is against evidence and the weight of evidence. That principle must not be interpreted in such a manner as to deprive the jury of its right of believing one witness on one side against twenty (or any number) of witnesses on the other side.

Setting aside a verdict is one thing. Entering a contrary verdict is quite a different thing. The giving of a verdict is the function of jurors, not of judges. Special provision, by statute or rules, is necessary in order to enable the court to go beyond setting aside the verdict of a jury and ordering a new trial and to enable it to direct a contrary verdict to be entered and to give judgement accordingly: see *Shepherd* v. *Felt & Textiles of Australia Ltd.*, 45 C.L.R., 359, *per* Dixon, J., at p. 379.

Under the judicature system in England, Order 58, rule 4, of the Rules of the Supreme Court permits the court upon appeal to draw inferences of fact and to enter judgement if it thinks fit, notwithstanding the verdict of the jury. This is a power which should be exercised "with considerable caution" and only "where the evidence is such that only one possible verdict could reasonably be given upon the evidence": *Baird* v. *Magripilis*, 37 C.L.R., 321, *per* Starke, J., at p. 334. But in New South Wales the judicature system is not in force, and the powers of a Full Court are less extensive. After a trial by jury the Full Court upon appeal has no power to draw inferences of fact; and though it may order a new trial where the verdict is against evidence and the weight of evidence, it cannot order a verdict to be set aside and judgement to be entered for the party against whom the verdict was given unless the conditions prescribed by the Supreme Court Procedure Act 1900, sec. 7, are satisfied. Sec. 7 provides that:

> In any action, if the Court in Banco is of opinion that the plaintiff should have been non-suited, or that upon the evidence the plaintiff or the defendant is as a matter of law entitled to a verdict in the action or upon any issue therein, the Court may order a non-suit or such verdict to be entered.

Thus, in the present case the Full Court could properly order a verdict to be entered for the defendant only if the defendant is "as a matter of law entitled to a verdict". If there is evidence upon which a jury could reasonably find for the plaintiff, unless that evidence is so negligible in character as to amount only to a scintilla, the judge should not direct the jury to find a verdict for the defendant, nor should the Full Court direct the entry of such a verdict. The principle upon which the section is based is that it is for the jury to decide all questions of fact, and therefore to determine which witnesses should be believed in case of a conflict of testimony. But there must be a real issue of fact to be decided, and if the evidence is all one way, so that only one conclusion can be said to be reasonable, there is no function left for the jury to perform, so that the court may properly take the matter into its own hands as being a matter of law, and direct a verdict to be entered in accordance with the only evidence which is really presented in the case: see *Shepherd* v. *Felt & Textiles of Australia Ltd.* (*supra*), *per* Starke, J., at p. 373:

> Where on the uncontroverted facts the action or an issue must be determined in favour of one party, then, as a matter of law, that party is entitled to the verdict in the action or upon the issue. And it is necessarily wrong to leave any conclusion or inference in such circumstances as a question of fact to the jury.

Under sec. 7 the Full Court can never direct a verdict for the party upon whom the onus of proof lies (the plaintiff in this case) because the question whether or not the evidence for that party should be believed is essentially and necessarily a matter for the jury. But however great the preponderance of evidence may be in favour of the other party, the Full Court cannot on that ground direct a verdict to be entered for that party. In *De Gioia* v. *Darling Island Stevedoring & Lighterage Co. Ltd.*, 1942 S.R. (N.S.W.), 1, Jordan, C.J., expressed the rule which is applicable by saying that:

> . . . if the stage is reached that a *prima facie* case has been made out, the question whether the jury should accept that case, or should accept rebutting evidence called for the defendant, is one for them, no matter how overwhelming the rebutting evidence may be; and the trial Judge must leave it to them. If the jury find for the plaintiff, and the Full Court rules that the rebutting evidence is overwhelming, it is expressing the opinion that the defendant was, as a matter of fact, not of law, entitled to a verdict: *Wilton* v. *Leeds Forge Valley Co.*, 32 W.R., 461; *How* v. *London and North Western Railway Co.*, (1891), 2 Q.B., 496 at 500-1. It cannot, therefore, enter a verdict in his favour, but can only order a new trial.

See also *Huddart Parker Ltd.* v. *Cotter*, 66 C.L.R., 624, at p. 660.

There is sometimes great difficulty in distinguishing between a case of no evidence upon which a jury could reasonably find for a plaintiff (so as to justify entry of a verdict for the defendant) and a case of some evidence for the plaintiff but greatly preponderating evidence for the defendant (where a verdict for the plaintiff can be set aside and a new trial ordered but it would be wrong to direct a verdict for the defendant). Davidson, J., and Halse Rogers, J., refer to this difficulty in this case in 43 S.R. (N.S.W.), 154, at pp. 157 and 166 respectively. But this distinction, though difficult to apply in particular cases, is very real and important. The relevant principle was expressed in *Dublin, Wicklow and Wexford Railway Co.* v. *Slattery*, 3 A.D.,

1155, by Lord Hatherley, who said at p. 1168 that he concurred with Mr. Justice Barry's opinion in the court below, namely "When once a plaintiff has adduced such evidence as, if uncontradicted, would justify and sustain a verdict, no amount of contradictory evidence will justify the withdrawal of the case from the jury". The question for the court is not a question whether the evidence for the plaintiff should be believed or not. In the last-cited case Their Lordships all agreed in this view and they emphasized the importance of maintaining that principle under a system of trial by jury. The headnote fairly states the decision:

> Where there is conflicting evidence on a question of fact, whatever may be the opinion of the Judge who tries the cause as to the value of that evidence, he must leave the consideration of it for the decision of the jury.

The judge must leave the case to the jury, because, however preponderating the evidence against the plaintiff may be in his opinion, it is a matter for the jury to determine what evidence they believe. All Their Lordships were of opinion that the verdict in the case under consideration was against evidence and against the weight of evidence, but nevertheless it was held that a verdict should not be entered for the defendant. Lord Cairns, L.C., referring to the distinction between the question whether a verdict was against evidence or the weight of evidence and the question whether there was no evidence which, if believed, would justify a verdict for the plaintiff, said at p. 1165:

> . . . I have already said that your Lordships have not now before you the question of whether the verdict was against evidence, or against the weight of evidence. But I feel bound to say that if that question were now open, I should, without hesitation, be of opinion that a verdict more directly against evidence I have seldom seen.

Similar statements are made by Lord Penzance at p. 1181, by Lord O'Hagan at pp. 1182, 1185 and 1186. Lord Selborne, at p. 1187, says that the evidence must be left to a jury, however strong contradictory evidence might be by which it was met. So also Lord Blackburn, at p. 1203, said that he quite agreed "that it is not enough that the balance of testimony should be overwhelmingly on one side, and that therefore a verdict the other way ought to be set aside as unsatisfactory", and at p. 1216 he said, "in order to avoid all chance of misapprehension hereafter, I think it better to repeat that I do not think that the cogency or strength of the evidence in support of a disputed fact justifies the Judge in directing the jury to find it". He adds that where there is an admission, the judge is not only entitled, but bound to direct the jury to act upon the admission. Finally, at p. 1217 Lord Gordon says that "whether the evidence be strong, or conflicting, or weak, it is equally the province of a jury to decide upon it". See the references to the *Dublin, Wicklow and Wexford Case* in *Banbury* v. *The Bank of Montreal*, 1918 A.C., 626, at pp. 672-3. See also *Metropolitan Railway Co.* v. *Jackson*, 3 A.C., 193, at p. 207, *per* Lord Blackburn: "It is for the jury to say whether and how far the evidence is to be believed."

It may be, however, that, even though the plaintiff makes out a *prima facie* case, uncontested and indisputable evidence called by the defendant may be such as to provide an explanation which deprives the plaintiff's case of its *prima facie* effect, as in *De Gioia* v. *Darling Island Stevedoring & Lighterage Co, Ltd.* (*supra*). In such a case the position is that upon all the evidence a jury acting reasonably can only come to one conclusion, so that as a matter of law the party on whom the onus of proof does not lie is entitled to a verdict. But this exceptional case arises only where there is no conflict of evidence, so that the case falls within the general principle which sec. 7 embodies, namely that where there is really no question of fact for the jury to decide the Full Court may determine that, as a matter of law, one party is entitled to a verdict.

I have not referred in detail to the authorities which establish the proposition which I have stated, because they are very fully set out in the judgement of Davidson, J., in this case in 1943 S.R. (N.S.W.), 154. I particularly mention, however, *Ryder* v. *Wombwell*, L.R. 4 Ex., 32, and *Mechanical & General Inventions Ltd.* v. *Austin*, 1935 A.C., 346.

The principles stated must be applied in reference to the verdict actually given. In the present case the jury did not merely give a general verdict for the plaintiff for £800. The jury also answered a specific question submitted to them by the learned Judge. This question related to the basis of the plaintiff's claim, that is, the leaving of a piece of a rubber tubing in her neck after the operation, and the verdict of the jury must therefore be considered in relation to their finding upon the particular fact to which the question related. But the answer to this question must be regarded from two points of view: (1) In order to determine whether as a matter of law the defendant is entitled to a verdict, it is necessary to determine whether there was any evidence upon which the jury could reasonably find for the plaintiff the general verdict which the jury did in fact find. From this point of view the answer to the specific question submitted to the jury is not decisive of the case, because if there was evidence which would justify a verdict for the plaintiff with no reason given, the fact that the jury in effect gave (if it does give, as in this case) what may be held to be a wrong or unsupportable reason for the verdict (in the sense that it was a reason that reasonable men could not properly regard as such) would not entitle the defendant to a verdict. In such case the defendant could not be said, as a matter of law, to be entitled to a verdict, though he might have streng grounds for claiming a new trial. (2) Thus when the question is whether the verdict actually given is against evidence and the weight of evidence, so as to justify the granting of a new trial, then the particular reason assigned by the jury for its verdict as the ground of the verdict is a matter of great importance. If, in the present case, a reasonable jury properly instructed could not come to the conclusion stated in the answer to the question submitted to them there would be ground for ordering a new trial, because it would not appear that the verdict was not based upon the unsupportable reason.

There is one other matter to which reference should be made before entering upon a consideration of the evidence. The granting of a new trial is a matter of discretion. The court is not bound to grant a new trial in every case where it has the power to do so. In exercising the power to grant a new trial the court should consider all the circumstances of the case, including, in this particular case, the fact that several trials have already taken place.

I propose therefore to examine the evidence in the case for a particular purpose, namely in order to determine whether there was evidence upon which a jury could reasonably reach a verdict in favour of the plaintiff. I will also consider whether there was evidence upon which a jury could reasonably answer the specific question submitted to the jury by the learned trial judge in the way in which in fact the jury did answer that question. The object of the examination of the evidence will not be to consider whether a verdict for the defendant, if it had been given, could have been supported. There is no doubt that the defendant adduced evidence which, if believed by the jury, would have justified the jury in finding a verdict for him. He denied the allegations of the plaintiff as to the actual incident of leaving a part of the tube in the wound, and he adduced a most impressive volume of medical evidence which, if accepted by the jury, would involve a disbelief of other evidence given by the plaintiff as to her illness and associated incidents, and would involve also a disbelief of the medical evidence called on behalf of the plaintiff. The question is not whether the defendant's evidence is overwhelmingly stronger than that for the plaintiff, but whether the evidence for the plaintiff, if believed, including evidence as to any admitted or undisputed facts [see *De Gioia's Case* (*supra*)] is such that a jury could reasonably find for the plaintiff. The question before this Court emphatically is not a question whether the evidence for the plaintiff should be believed or not.

The plaintiff sued the defendant for damages for negligence. No negligence was charged with respect to the performance of the operation of thyreoidectomy. Particulars of negligence were given as follows:

> . . . the Plaintiff will allege that she was operated upon by your client in the lower region of the throat; that a piece of drainage tube was inserted in the wound by your client and that this drainage tube was so negligently or unskilfully manipulated by your client that it broke and that your client thereafter negligently failed to remove the portion of the said drainage tube remaining in the wound with the result that the Plaintiff developed a complaint believed to be tetany in a very acute form—to such an extent that she was dangerously ill over a period of more than eighteen (18) months and that she only recovered from this illness on the passing of this piece of tube into the gullet whence it ultimately passed from the body *per rectum*.

It is not disputed that evidence that the defendant left a piece of tube in the plaintiff's neck is evidence of negligence.

The plaintiff gave particulars of the nature and description of the piece of rubber tube mentioned and, in particular, of the shape, size, length and colour thereof in the following terms:

> A piece of soft rubber tube about two inches long, greyish in colour, and had the appearance of having been in water for some time. It was cut off straight at one end and torn at the other. On the side was a straight cut in which could be seen what appeared to be a swab and wire protruding from torn end of tube.

The learned Judge at the trial submitted the following question to the jury:

> Did the defendant leave in the site of the operation the object substantially as described, that is, a piece of rubber tube about two inches long, cut off straight at one end and torn at the other, on the side a straight cut in which could be seen what appeared to be a swab and wire protruding from torn end of tube?

When the jury returned into the court with a verdict for the plaintiff for £800, the foreman said:

> We have not answered the question in the words supplied by Your Honour but we have found certain facts on that particular question, the answers of which I have here.

The answer to the question was then handed to the learned trial Judge. It was in the following terms:

> We find: That the defendant left in the site of the operation a piece of rubber tube of a length somewhat less than two inches, cut off straight at one end and torn at the other, part of which tube had been cut down one side and from which protruded some material which looked like wire and a swab from the torn end of the tube.

The evidence adduced for the plaintiff consisted of the testimony of the plaintiff herself, her husband, and friends and acquaintances who saw her during her illness, and a nurse who nursed her at her home for some time after the operation, and of expert medical evidence given by Professor D. A. Welsh and Dr. G. S. Thompson.

Evidence was given that the plaintiff was in ill health in 1937. She had an enlarged thyreoid gland. She was examined by Dr. K. O'Hanlon at Quirindi on August 23, 1937. She was then treated by Dr. J. W. Flynn for giant urticaria and angio-neurotic œdema, which, as stated by Dr. E. P. Sloan in his book "The Thyroid" (1935), p. 120, are affectations which occasionally occur in goitre cases. She was treated in the Quirindi Hospital from October 19 to November 15. In a letter to Dr. H. J. Ritchie written on February 12, 1938, Dr. O'Hanlon describes her goitrous condition, stating that the thyreoid gland was very prominent, and that he thought she was thyreotoxic. Upon Dr. O'Hanlon's advice she consulted Dr. Ritchie on February 21, 1938, who diagnosed the case as one of thyreotoxicosis. Thyreotoxicosis is a condition produced by over-secretion of the thyreoid gland. It results in nervousness, hot flushes, palpitations, emotional disturbance, and sometimes protrusion of the eyes (exophthalmic goitre) and causes a loss of weight. Dr. Ritchie was of opinion that an operation was desirable, and he referred the plaintiff to Dr. Bell. Dr. Bell is a surgeon of extensive experience and with high qualifications. The plaintiff went into St. Luke's Hospital, and was prepared for the operation during a period of rest and treatment.

The operation took place on March 15, 1938. The operation involved the making of a horizontal incision at the base of the throat and a penetration of the structures overlying the thyreoid gland. The skin, the platysma muscle and the cervical fascia would be cut. The thyreoid gland lies behind the infrahyoid muscles (the sterno-thyreoid the sterno-hyoid, and the omo-hyoid) and is overlapped laterally by the sterno-mastoid muscle. The infrahyoid muscles would be either separated or cut, the pretracheal fascia continuous with the sheath of the thyreoid gland and the capsule of the gland would be cut and so much of the thyreoid removed as was in the judgement of the surgeon necessary. Special care is taken in this operation to avoid damage to the parathyreoid glands which are small bodies about the size of half a split pea, varying in number, lying behind the thyreoid gland itself. The removal of the gland is a delicate operation because the gland is perhaps the most highly vascular part of the body, and a large number of blood vessels have to be tied in order to prevent hæmorrhage. The wound is then sewn up with catgut, the gland being first sewn, and then the various structures overlying the gland are rejoined by stitches as required, and finally the external portion, the platysma muscle and the skin, are sewn, generally with horsehair. In order to provide drainage of the wound a rubber tube is inserted into the place which had been occupied by the thyreoid gland. It is a common practice to cut a small hole in the tube towards the inner end to assist drainage. The tube may be inserted either before or after the stitching is completed. The defendant was not sure whether he finished stitching before or after the tube was placed in position. The doctor who gave the anæsthetic to the plaintiff had no recollection of the operation but said that the practice of the defendant, with which he was familiar, was to do some internal stitching after he had inserted the tube. The tube is removed within twenty-four to forty-eight hours after the operation. The tube lies loosely in the wound, but is prevented from slipping into the sinus, that is, the incision, by being attached to the skin by a horsehair stitch and by a safety pin through the external end of the tube.

The hospital records show a normal progress on March 15 and 16. On March 17 these records state: "Tube removed and 3 sutures. Less discharge. Condition good." The following is the plaintiff's account of the removal of the tube:

> . . . he (Dr. Bell) said the tube was not working and he would take it out so he loosened some stitches and pulled the tube in his fingers, shook the tube, and it did not come out and so he pulled a little harder and it still did not come so he put his hand on my forehead and held the head back firmly and pulled and whatever it was came out and he said "Damn" and I said "Oh". He held it in his fingers for a second and I saw it, just a little dark piece of rubber, then he threw it into the tray and he and the sister turned around and left the room. I had a stinging sensation in the throat. It stung very much there (indicating).

The nurse who was present when the tube was removed was not identified by any evidence. The progress of the plaintiff was then not as satisfactory as before. Sutures were removed from time to time, but the temperature of the plaintiff rose and there was a purulent discharge from the wound, together with swelling of the neck. The discharge continued until the plaintiff left the hospital on April 14, when she went home. Before she left the hospital she had a feeling of "pins and needles" in her hands and feet, and calcium lactate was prescribed by the defendant. "Pins and needles" are frequently the first sign of tetany, which is a condition involving spasms of the body, in which the muscles of various parts of the body become rigid, resulting sometimes in great pain. Tetany may be caused in various ways, but one cause is to be found in injury to the parathyreoid glands. These glands control the quantity of available calcium in the blood and a deficiency in such calcium brings about tetany.

When the plaintiff went home she still had the feeling of pins and needles, and she had cramps and severe pain in the feet and legs. Dr. O'Hanlon saw her on April 30 and on May 2 her husband wrote Dr. Bell a letter in which he stated that:

> The throat is not yet healed, she has taken out seven knots since coming home. It is not discharging so freely.
>
> The whole body has been much swollen until today. It seems slightly less swollen tonight.
>
> The tetany is still very annoying, but the attacks do not last quite so long.

Dr. Bell replied on May 4, stating that he had been speaking to Dr. Ritchie about the plaintiff and that Dr. Ritchie suggested that she should take calcium in the form of calcium gluconate.

She was treated by Dr. O'Hanlon, and, in accordance with his advice, again went into the Quirindi Hospital, and remained there from May 4 to June 9. On May 10 Dr. O'Hanlon wrote to the defendant a letter containing the following:

> There was a free discharge from her neck and she told me she had recovered several pieces of suture material. She had also been troubled very much by contractions in her forearms and legs and occasionally in her facial muscles. A few days after I first saw her I persuaded her to go into hospital where she is at present—there we recovered more catgut and with frequent foments to the neck there is less discharge and it appears to be generally better. However, the tetany is I think worse. Yesterday she had a very severe spasm involving practically her whole body, it was accompanied by so much pain that I was forced to administer a mild chloroform anæsthesia (not a very safe treatment I know—considering her condition) until a solution of calcium chloride 10% could be prepared for intravenous administration. I gave 10 c.c.'s of this solution, with remarkably rapid and good result, later in the day Mrs. Hocking said she felt well, but had the feeling that she was

about to go into another spasm—however this has not occurred. I propose to give her a daily intravenous injection for a few days at least.

When I first saw her on her return, I put her on to "Glucophos" because of its calcium gluconate content, but I have ordered some of the Sandoz preparation.

Some text books regard post-operative tetany as being fatal very often—what is your opinion?

The Quirindi Hospital records, together with the evidence of the plaintiff, show that the wound in the neck was frequently fomented, and was kept open in order to permit an effective discharge. Pieces of catgut came out from time to time. (Catgut lasts longer in pus than in healthy tissue.) The hospital records also show that the nurses were directed to watch carefully for and report any tetanic spasms, and several spasms are recorded. Intravenous injections of calcium chloride were given. The wound improved, but tetany spasms are recorded up to June 1. The records also contain references to swelling in the plaintiff's neck. On June 9 the plaintiff left the hospital and went home. The wound did not finally close until the end of June or the beginning of July. On June 29 the defendant wrote to the plaintiff's husband, saying that he was sorry the news was not better about the muscle spasms, and that he had informed Dr. O'Hanlon about some recent methods of treatment and had sent him up some special injections for him to use. During the succeeding months the plaintiff was treated by injections, sometimes of calcium and sometimes of paroidin—a parathyreoid extract. The medical evidence for the plaintiff and for the defendant was that this treatment was essentially a treatment for tetany. On January 17, 1939, Dr. O'Hanlon wrote to the defendant saying that the plaintiff was improving, and that the major attacks, though not less frequent, were becoming less severe, though she had frequent minor spasms which did not leave the muscles involved as sore as before. He reported that she was not able to tolerate the large doses of calcium lactate for more than a month or so, and that she was having occasional doses of paroidin and also of morphia. Dr. O'Hanlon saw the plaintiff in February, 1939. The plaintiff, her husband and Dr. O'Hanlon gave evidence that the latter stated that he could do nothing further for the plaintiff. He did not see her again until September, 1939. In the meantime her husband administered calcium and paroidin, sometimes by subcutaneous injections. On May 27 the defendant wrote giving the plaintiff his good wishes, and saying that he had been talking to Sir Alan Newton in Melbourne about a similar case and that Sir Alan Newton was a great believer in cod-liver oil and calcium—a treatment which had resulted in the complete recovery of some patients.

The evidence of the plaintiff, her husband and a number of friends and acquaintances, including Sister Sly, who nursed her for a time after she came out of the Quirindi Hospital in June, 1938, was that her neck was swollen from time to time. There was also evidence that her neck was sometimes swollen so severely that she had difficulty in turning her head, and sometimes had to move the whole body if she wished to look in another direction. The plaintiff and her husband also gave evidence that there was a continuance of the muscular spasms throughout 1938 and during 1939.

The plaintiff and her husband gave evidence that on October 2, 1939, she had a very violent spasm. Her evidence is as follows:

> . . . on the Saturday and Sunday I was constantly drawn up with the tetany spasms. My muscles never relaxed once. I was closely drawn. They would give a little and I could straighten in bed but sometimes my knees were drawn up. I was drawn up, round. My back was bent up round. On the Monday I was really very ill. Round about three o'clock I did not think I was going to live any longer. I had my neck so bad. My husband came home round about then—I could not say exactly what time—and I had a coughing fit. I seemed to be choking. I started to cough and I swallowed something.
>
> Q.: How was your mouth? A.: I could not open or shut it. My teeth were not close together.
>
> Q.: You seemed to swallow something? A.: Yes, and I took a terrific lurch and the muscles seemed to tighten up dreadfully hard. Something burst into the left side of my face. I felt something knock through, as it were. I felt a sensation like something bursting. I had something on my tongue and I swallowed it, whatever it was.
>
> Q.: What happened after that. What was your condition? A.: I was still very ill after that for quite a while.
>
> Q.: Did you feel any sensation following that? A.: I do not remember clearly, but I think next day I felt a sensation in the stomach. Of course I felt something going down my stomach. It went very slowly. It seemed to move down my stomach.

After October 2 there were no spasms.

Her husband gave purgatives to the plaintiff and on the following Thursday morning, October 5, she had a motion and she said that she saw something in the receptacle from the commode which she picked out in her fingers. She said that while she was emptying the receptacle she was startled by the approach of somebody coming and she dropped the thing into the pan, where it was taken away by the flush. On the next day she made a sketch of the article, which she said was not to scale, but was intended to show her husband what sort of thing it was which had passed through her:

> The thing I had in my finger, I would say a soft greyish piece of tube like a piece of rubber which had been in water for some time. It was swollen. It was not smooth like a new piece of tube.
>
> Q.: What about the shape? A.: There was a straight cut at one end. It was split up within half an inch of the end and it had in that opening a swab which I thought was a piece of marine sponge with a blackish-looking stuff. It had come from this sponge and it looked like black wire, but when I bent it it would fly back straight. It was like horsehair, and it would fly back quickly straight. It looked like wire to me but it could not have been wire.

It may be mentioned that it was not suggested in cross-examination of the plaintiff or by any evidence for the defendant that the plaintiff had any knowledge of or familiarity with drainage tubes or the manner in which they might be cut.

Dr. O'Hanlon saw the plaintiff on October 6 and on October 7 he sent the plaintiff's sketch to the defendant with a letter in which he said:

> Mr. Hocking gave me the following history: Last Monday she had as bad an attack of tetanic spasm as she has ever had, she complained of pain in the neck which was swollen. Until Wednesday she complained of pain and soreness from the neck to the stomach, the act of swallowing was painful, he thought she had symptoms of indigestion and gave her castor oil, salts *et cetera*. On Thursday Mrs. Hocking had a bowel action and passed a piece of grey rubber tubing, squarely cut on one end and ragged on the other, the tube was partially split up and stuck in the lumen was what she took to be a small piece of marine sponge about which was twisted a piece of wire. I enclose the sketch she made for her husband and which he passed on to me. Mrs. Hocking emptied the tube along with the bowel action result into the W.C. so neither Mr. Hocking nor I saw it. Mrs. Hocking's description is too vivid for the article to be imaginary so of course I was somewhat nonplussed when I was asked to explain it all.
>
> Assuming that it was a piece of drainage tube that was accidentally left behind—I suppose it is possible that it could work its way into the œsophagus, though to me it seems strange that it did not work out through the sinus which persisted for so many weeks after her return from Sydney. Mrs. Hocking on a few occasions did complain of soreness in the neck, but at no time did I ever detect any symptoms that would indicate an X-ray examination—naturally the possibility of a foreign body being the cause never entered my mind. Within a month or six weeks after her return from Sydney her nurse did recover undissolved sutures on several occasions, the sinus eventually closed and now she has an excellent scar. The attacks of tetany have become fewer nevertheless, Mrs. Hocking is still far from well, she is very unsteady when she tries to walk.
>
> If a foreign body has remained in the neck all this time, do you think that it may be a possible cause of the tetany, and could we now expect an improvement in her general condition? You understand, Doctor, that this question is based on an assumption only.

On October 11 the plaintiff wrote to the defendant saying that a piece of drain tube had been left in her neck and that it burst into her gullet so that she almost choked. The defendant replied on October 15, saying that he was sorry to hear that she had been ill again, that he had had a letter from Dr. O'Hanlon and had spoken to him on the telephone, and adding:

It is difficult to explain your last illness and the "piece of drain tube" which you say passed by the bowel.

I saw Dr. Ritchie during the week.

I think you should come to Sydney for a medical investigation in order to see if we can advise some medical treatment to improve your health.

The plaintiff came to Sydney on October 26 and went into St. Luke's Hospital. She remained in the hospital until November 3. A blood test was taken by Dr. Tebbutt and it showed a calcium deficiency, the figure being 7·2 milligrammes per cubic centimetre, when the normal figure to be expected was 10. The defendant and Dr. Marsh, a highly qualified throat specialist, examined the plaintiff's throat, and she returned to her home. In November, 1939, Dr. Ritchie prescribed calcium gluconate for her.

The evidence to which I have hitherto referred is evidence of events alleged by the plaintiff to have happened. I come now to evidence consisting of expressions of medical opinion. Professor David Arthur Welsh, who was from 1902 to 1936 Professor of Pathology in the University of Sydney, gave evidence for the plaintiff. He had made a special study of the thyreoid and parathyreoid glands, but had had little or no actual surgical experience. He described the glands and explained that the parathyreoid glands regulate the calcium content of the blood by taking calcium salts from the bony skeleton, and that if the calcium content of the blood dropped below 10 there was latent tetany, and if much below 10 there was open and declared tetany. He said that if the parathyreoid glands were reduced in number or if their function was interfered with in any way by interference with the blood supply or if they were destroyed by suppuration or inflammation they could not perform their function of taking enough calcium to provide the requisite calcium content in the blood, and that the result was tetany. Inflammation about the thyreoid gland would, in his opinion, undoubtedly affect the functioning of the parathyreoid glands.

Professor Welsh said that the hospital records, referring to the discharge from the wound after the operation as "a thick purulent discharge", showed that some pus-producing bacteria had been introduced into the wound. The result was suppuration in the wound. The cramp in the fingers which was recorded on March 20, 1938, could be the very early development of tetany. If a piece of rubber had been left in the wound the effect would be to perpetuate the inflammation or suppurative process. Even if there were such a foreign body in the cavity, the wound could heal externally (as in fact it did). In his opinion the pus in the wound could travel anywhere in the neck, and gravity had very little influence in the neck, so that the pus might spread upwards, that is, in the direction of the tonsil. He said that the infection

> . . . usually spreads between the various structures in the neck, each little structure, each muscle and the thyreoid gland itself and a group of big important vessels in the neck are enclosed in what is called a fibrous capsule and the inflammation and suppuration usually spreads by separating these structures along their fibrous capsules, opening up the spaces between them, what we call the fascial planes. One has to imagine each little structure like a muscle or gland enclosed in a band or sheath of that fibrous tissue and the tendency of the suppuration is to spread up between these and of course to carry any foreign body with it.
>
> Q.: Would there be anything to prevent it going to the tonsil? A.: No, nothing serious to prevent it going to the tonsil.
>
> Q.: And would it necessarily on its way injure any blood vessel or muscle? A.: Not necessarily seriously injure any blood vessel or muscle. It might have taken a different course and seriously injured the blood vessel, but there is no history in this case that it did so.

This witness said that suppuration might result only in a thickening of fascial planes without any destruction of muscles, and therefore without any permanent effect in limiting the movement of the neck.

The plaintiff had given evidence that the thing which she had evacuated had something like wires sticking out of it and something like a swab in it. The defendant's advisers took a piece of tube and inserted wires and a piece of a swab in it, and the plaintiff said that it was a fair representation or a rough representation of what she had passed. This article, Exhibit "P", was two inches long with projecting wires extending another one and a half inches. Professor Welsh would not suggest that anything like Exhibit "P" with the wires in it could travel in the body.

He gave an example of a particular form of tubercular abscess, a psoas abscess, travelling between the fascial planes (that is, the membranous sheaths of the muscles) for a considerable distance in the body.

The opinion of Professor Welsh was that if there was a foreign body in the thyreoid there would be suppuration, and the function of the parathyreoids would be disorganized, with tetany as a result. He regarded the history of the plaintiff in the Quirindi Hospital as certain proof that she was suffering from true tetany due to calcium deficiency in the blood, and that her account of complete cessation of spasms after the eruption into her throat which she described was what could be expected when the cause of the tetany had been removed. As to the probability of the sudden disappearance of tetany when the cause thereof is removed, it is of some interest to note that in the Oxford English Dictionary sub "Tetany" there is a quotation from Allbutt's System of Medicine, 1899, p. 48: "The tetany spasms ceased the day after a tapeworm had been expelled."

He also gave evidence that some two years before the trial he had examined the left tonsil of the plaintiff, and had seen a distinct scar in the tonsil which indicated that some kind of "volcanic eruption" had taken place from the tonsil which was consistent with an abscess having burst out of that tonsil. He also said that the other tonsil was not anything like the left tonsil. He said that the condition of the tonsil indicated to him that there had been great disorganization of its structure, and that the area in which the scar appeared was sufficient to permit the exit of a tube such as had been described.

The opinion of Professor Welsh was that the thick purulent discharge showed that there was an infected suppurating wound, that the subsequent history showed spreading suppuration in the neck which began in the region of the thyreoid, and that ultimately there was an abscess in the left tonsil which burst.

The evidence of Professor Welsh was challenged in cross-examination, and some of it was contradicted by evidence called for the defendant. I am, however, at present considering only whether there was evidence for the plaintiff which, if believed, would justify a verdict for her.

Dr. G. S. Thompson, another witness for the plaintiff, appears to have extensive medical and surgical knowledge, but no special qualifications with reference to the thyreoid gland or the operation of thyreoidectomy. He gave evidence supporting that of Professor Welsh, stating that in his opinion the history of the plaintiff's case immediately after the operation, particularly in relation to her temperature, showed that the wound was infected. The hospital records showed a long continuance of that infection, the discharge not ceasing until July, 1938; the illness of the plaintiff during 1938 and 1939 was undoubtedly parathyreoid tetany; if a piece of tube were left inside the wound made by the operation, it could set up suppuration, as a result of which the tube could become located in an abscess in the tonsil. He gave evidence with respect to the anatomy of the neck, agreeing with witnesses for the defendant that the thyreoid gland was located in a particular compartment (the visceral compartment) of the neck which was separated by fascia from a (muscular) compartment containing certain muscles and another (vascular) compartment containing blood vessels *et cetera*. The compartment containing the thyreoid gland ended in its anterior upper portion at the hyoid bone and no suppuration could take a foreign body past that anterior portion of the compartment without some destruction of the infrahyoid muscles, but in the rear the compartment extended to the base of the skull. In Dr. Thompson's opinion it was possible for a piece of rubber tube to travel from the thyreoid gland to the tonsil—a distance variously estimated by witnesses at from about one inch to as much as five inches (and actually measured in court in the case of the plaintiff as being two and a half inches). Reference was made in evidence to the description in Cunningham's "Text Book of Anatomy" of the visceral compartment, and the statement therein as to the presence of loose areolar tissue and fat in the neck near the tonsil. The relevant references in the seventh edition are to pp. 1372, 1373, 1374. See also Jamieson, "Illustrations of Regional Anatomy", figure 50, and "Tonsil Surgery", by R. H. Fowler (1930), pp. 34 and 49, as to the tonsil lying in a bed of loose areolar tissue separating it from adjoining muscles. The quantity of connective tissue and fat varies with different individuals.

Dr. Thompson gave evidence that in his opinion the Quirindi Hospital records showed conclusively that the plaintiff had true tetany. He said that it was quite possible that the tube could travel from the neck to the tonsil without destroying any vital organs and that a psoas abscess provided an example of the travelling of pus in an abscess which illustrated in a comparable manner the effect of pus. He also was of opinion that the fact that the calcium content of the plaintiff's blood in October, 1939, was 7·2 milligrammes per cubic centimetre, instead of 10 milligrammes, supported the opinion that the plaintiff was suffering from tetany brought about by some interference with the parathyreoid glands. He said that he was unable to see any other explanation of the calcium deficiency. The hospital records showed that the plaintiff became unconscious on some occasions, and she gave further evidence of unconsciousness during spasms. In Dr. Thompson's opinion unconsciousness did occur in tetany in severe cases. He agreed with Professor Welsh that the wound might close notwithstanding the presence of a foreign body. He gave evidence that it was possible, if stitching were done after a tube was inserted in a wound, for a stitch to catch up the rubber so as to hold it.

Dr. Thompson examined the plaintiff's tonsil before the first trial and gave evidence that there was a punched out canal in the tonsil one-quarter of an inch in diameter and three-quarters of an inch long, and that this indicated that the tonsillar tissue had been killed in some way and had sloughed away. This hole was not the supratonsillar recess or fossa or any other of the crypts of the tonsil which appeared in a normal tonsil.

A great deal of Dr. Thompson's evidence was attacked in cross-examination and by contradictory evidence.

The plaintiff's case was that the inner end of the tube, at or about the small hole in the tube, was accidentally caught in a stitch; that the tube, possibly being somewhat perished, broke when it was being removed and that what appeared to the plaintiff, in a condition of exhaustion and distress, to be wire and a piece of swab, were pieces of catgut and a deposit of some kind within the body of the tube; that the illness of the plaintiff after the operation was explainable by the presence of the tube in tissues of the neck affected by suppuration, resulting in an abscess which ulcerated through the tonsil, the piece of tube having moved in the affected tissues and along fascial planes without permanently destroying any vital organs; that Dr. O'Hanlon and the defendant treated the plaintiff for true tetany and that she suffered from true tetany which could be explained only by injury of some kind to the parathyreoid glands; that suppuration within and about the capsule of the thyreoid gland would produce such injury; that such suppuration was established by hospital records and other evidence; that the sudden cessation of the tetany spasms was explainable by the sudden removal of the cause by the bursting of the abscess in the tonsil and the extrusion of the piece of tube; and that the calcium deficiency discovered in the blood in October, 1939, strongly supported this case.

I have already referred to authorities which establish the proposition that, wherever there is conflicting evidence, it is for the jury to determine what evidence they will believe, and that it is not the function of a judge, either at the trial, or upon an application for a new trial, or upon an application for a verdict to be entered against the party on whom the onus of proof lies, to act upon his own opinion that certain witnesses should be believed rather than other witnesses. If I felt at liberty to act upon my own opinion of the evidence I would regard the evidence for the defendant as overwhelming the evidence for the plaintiff. There are obvious improbabilities of high degree in the plaintiff's statement as to what happened when the tube was extracted, and upon other points the evidence of the plaintiff is plainly open to serious attack. (See the analysis of evidence upon the first trial in 42 S.R., 130, and upon the last trial in 44 S.R., 468.) Further, the qualifications of the medical witnesses for the defendant are much superior to those of the medical witnesses for the plaintiff. But these facts affect the weight and not the existence of the evidence for the plaintiff. It cannot, in my opinion, be said that if the evidence for the plaintiff which I have summarized was believed there was no evidence to support a verdict for the plaintiff. Accordingly, in my opinion, it cannot be held that, as a matter of law, the defendant is entitled to a verdict in this case.

It may be added that the evidence for the defendant provides instances of doctors differing and affords support for the plaintiff's case in certain particulars. I mention some examples. There was evidence by a witness for the defendant that there was a possibility—though only "a bare possibility"—of a tube being caught by an internal stitch and that a surgeon should guard against such a possibility. In general, the defendant's witnesses (and the defendant himself) agreed that suppuration, and infection, as well as trauma, could interfere with the effective operation of the parathyreoid glands and so produce tetany. One of his witnesses, however, was of a contrary opinion. The defendant's witnesses in general, though conceding that pus might travel almost anywhere, denied the possibility of a foreign body travelling from the thyreoid gland to the tonsil without serious destruction of organs of which they saw no signs. One witness, however, said that, though highly improbable, it was "a remote possibility", and another admitted that it was "a very vague possibility". Some evidence for the defendant was carefully limited to what was described as "anatomical possibility"—apparently as distinguished from pathological possibility—and the plaintiff was suffering from a pathological condition. Some of the defendant's witnesses were of opinion that the illness of the plaintiff after the operation was in the first place true parathyreoid tetany, but after about June the condition was not true tetany, but was a condition of hysteria, simulating tetany. It was not disputed that the plaintiff was in fact treated as for true tetany and not as for hysteria. The defendant's witnesses differed to some extent in selecting a point of time at which the true tetany ceased and the hysteria commenced. One witness for the defendant, however, was of opinion that the witness never suffered from true tetany, but was at all relevant times a victim of hysteria. I think I am right in saying that there was no evidence that hysteria would affect the calcium content of the blood. There was much evidence that the plaintiff did sometimes lose consciousness. The defendant's witnesses gave evidence that tetany due to parathyreoid injury was marked by the feature that the patient did not lose consciousness during spasms, while during hysteria consciousness might be lost on occasions. But these witnesses had to agree that a considerable number of leading authorities expressly stated, as Dr. Thompson had done, that in severe spasms of true tetany consciousness might be lost. Some of the witnesses for the defendant did not agree with statements or diagrams contained in what were admitted to be leading works of authority. I refer to these divergences of opinion as matters which a jury was entitled to take into account, though, as I have already said, if I had to determine the case according to my own opinion, I would have no doubt whatever in deciding for the defendant. It is, however, as I have already said, most important that a judge should not usurp the function of the jury, even if he regards the evidence against the verdict as most cogent, and indeed, overwhelming in character.

If, then, there was evidence upon which a jury might reasonably find for the plaintiff, it is immaterial (in determining whether a verdict should be entered for the defendant) that the jury answered in favour of the plaintiff the specific question which was asked, even though there might not be evidence to support the answer to that specific question. If the verdict had been against the plaintiff, then the plaintiff could not have claimed a new trial on the ground that a question to which she had not objected had been submitted to the jury. But even if there was no evidence to support the answer given by the jury to the question, it does not follow that a verdict should be entered for the defendant. The fact that there was no evidence to support that particular answer does not show that the defendant is entitled to a verdict as a matter of law.

But it is unnecessary for me to base my decision in this case upon the view which I have just stated, because, in my opinion, there was evidence which, if believed by the jury, can reasonably support the answer given by the jury to the question submitted to them by the trial judge. The answer to this question shows that the jury substantially believed the story of the plaintiff, however improbable that story may appear to be. The description of the piece of rubber tube is based upon the drawing made by the plaintiff, which is a remarkable feature of the case. The drawing shows what looks like a rubber tube with a "V" cut in it, the tube being torn across the "V" cut, with lines projecting which the plaintiff says looked like wire, "but of course were not wire". There was evidence that it was the practice to make a cut in the inner or distal portion of a drainage tube to facilitate drainage. The finding of the jury may legitimately be read, not as stating that there was actually wire in the tube or an actual swab in the tube, but that there projected from the tube some material which looked like wire and which looked like a swab. The jury, believing the plaintiff, only describes what the plaintiff said she believed she saw. As to the size of the tube, much

evidence was given to the effect that the whole of a tube would not be longer than two inches, but there was also evidence that the length of tubes used varied from time to time, as would naturally be expected, and an illustration of a thyreoidectomy operation in a book used by the defendant's witnesses—Binnie's "Treatise on Regional Surgery", 1917, Vol. 1, p. 497—shows a tube in position, the visible projecting part of which appears to be considerably over an inch in length. Some evidence for the defendant admits that a tube used in a modern thyreoidectomy operation may be as long as two and three-eighth inches. The evidence for the defendant as a whole is that tubes used in such operations are practically never longer than two inches. But this question of fact was a matter for the jury, and the answer of the jury is "somewhat less than two inches". Thus, in my opinion, there was evidence to support the answer of the jury, though I should not have given that answer myself.

The Full Court of the Supreme Court had already decided on a prior occasion that judgement should not be entered for the defendant because in that trial there was evidence, though the court regarded it as highly improbable evidence, upon which a verdict could reasonably be found for the plaintiff. In his reasons for judgement on this last occasion Davidson, J., examining the evidence called for the defendant, expressed the opinion that it established that it was "anatomically and pathologically" impossible for a piece of the tube to travel from the position of the thyreoid gland to the tonsil, because vital structures would necessarily have been damaged in the course of such a passage. He was of opinion that the defendant's evidence supplied an explanation of the alleged hole or depression in the tonsil. I agree that there was very strong evidence for the defendant that it was impossible for a piece of rubber tubing to travel from the thyreoid gland to the tonsil without destroying important, if not vital, organs. But the evidence was in conflict on this point and also on the question of the existence and probable origin of the hole in the tonsil. It is for a jury, where there is a conflict of evidence, to say which evidence they will accept. This is not a case where, even if the evidence for the plaintiff is accepted, some other undisputed evidence for the defendant explains away the first apparent effect of that evidence, as in *De Gioia's Case* (*supra*) so that, when the evidence for the plaintiff is supplemented (not *contradicted*) by the other evidence, it can be seen that there is no evidence to support the plaintiff's case. This is a case of direct conflict of evidence. The conflict was extensive and vigorous. Whatever may be thought of the weight of the evidence given on behalf of the plaintiff, it cannot be described as a mere scintilla. That evidence was actually held by the Full Court to be more than a scintilla in the case of a prior trial (see 43 S.R., 154) and it is not suggested that any less evidence was given for the plaintiff at the last trial. But on this occasion it has been decided by the majority of the Full Court that there was no evidence for the plaintiff to go to the jury. It was said, quite accurately, that more evidence was given for the defendant at the fourth trial than at the previous trials. But more evidence for the defendant is not the same thing as no evidence for the plaintiff. No amount of additional evidence for the defendant can have the result of reducing the evidence for the plaintiff to zero.

His Honour Halse Rogers, J., pointed out certain divergences between the particulars given of the object evacuated by the plaintiff, and the finding of the jury. I agree with the view of Davidson, J., on this part of the case, that there is no substantial divergence between the particulars and the answer given by the jury. Halse Rogers, J., was of opinion that if the jury had returned a verdict for the plaintiff without any special finding the position would probably have been the same as upon earlier appeals to the court, but that the specific answer given to the question asked provided a distinction between this appeal and earlier appeals. I have already said that in my opinion there was evidence upon which a jury could answer the question as the jury actually did answer it. Halse Rogers, J., referring to the evidence as to anatomical and pathological possibilities, as to which there is a conflict, said: "On the worth of the conflicting statements the court itself must decide." It may or may not be that it would be better to allow judges to decide such questions, but, in my opinion, under the system prevailing in New South Wales a decision upon this question is necessarily for the jury, and not for the judges.

I summarize my opinion upon the question of entering a verdict for the defendant in the following propositions:

(1) The evidence for the plaintiff, *if it is believed*, is such that a jury could reasonably find a verdict for the plaintiff.

(2) The jury believed that evidence in substance, and found a verdict for the plaintiff.

(3) The majority of the Full Court was of opinion that *no jury could reasonably believe* the evidence for the plaintiff; and this is quite different from an opinion that the evidence, *if believed*, could not reasonably justify such a verdict.

(4) The opinion that the evidence for the plaintiff could not reasonably be believed is not based upon a consideration of that evidence independently of any contradiction or qualification of it by evidence for the defendant, but is the result of a decision of the Full Court that the jury ought to have accepted the contrary and greatly preponderant evidence for the defendant.

(5) Thus the evidence for the plaintiff is regarded as being reduced to zero (or to "a scintilla"), not by reason of the character of that evidence itself, but as a result of the countervailing evidence for the defendant.

(6) Accordingly the conclusion that there is no evidence to support the plaintiff's case is reached on the ground that the jury should have resolved the conflict of evidence by accepting the evidence for the defendant as against the evidence for the plaintiff.

(7) The result is that the court has substituted its own opinion upon conflicting evidence for that of the jury. This procedure cannot, in my opinion, be justified under sec. 7 of the Supreme Court Procedure Act 1900.

Roper, J., while agreeing that the verdict was against evidence and the weight of evidence, and referring to the improbabilities of the plaintiff's story, said:

> Notwithstanding these improbabilities, two juries have each found a verdict which necessarily involves that they have accepted these aspects of the plaintiff's evidence as being the truth. Two other juries have each disagreed on the issues submitted to them.

He referred to the high eminence and special qualifications of the medical and surgical experts called for the defendant, and said that it was of preponderating weight, but that it could not be held to establish a case of scientific certainty. Accordingly, His Honour was of opinion that, although the expert evidence against the plaintiff was overwhelmingly strong, it could not be said that there was no evidence upon which the jury could find for the plaintiff, and that accordingly the proper order to make was an order for a new trial, and not an order directing a verdict for the defendant.

I agree with Roper, J., for the reasons which I have stated, that the Full Court should not have entered a verdict for the defendant.

The next question is whether the verdict should be set aside and a new trial ordered. The fact that, in the opinion of a judge, a verdict is against evidence and the weight of evidence, should not be regarded as necessarily requiring an order for a new trial. The court has a discretion in exercising its power to grant a new trial, and all the circumstances of the case should be taken into consideration. This is the second verdict for the plaintiff. The last trial was the fourth trial, and a new trial would be a fifth trial. The result of four trials is that 12 jurors out of 16 have found for the plaintiff. If a fifth trial is ordered, the result may be that again a verdict will be given which will be set aside, and the preservation of a consistent attitude by the court would then result in an order being made for a sixth trial. In my opinion it is proper to adopt the other alternative, namely, to allow the verdict of the jury to stand. I again refer to the all-important principle that it is the function and duty of the jury to decide questions of fact where there is a conflict of evidence, and that the fact that judges have a different opinion on questions of fact cannot justify the entry of a judgement notwithstanding a verdict, unless there really was no evidence upon which a jury could properly find for the plaintiff. It is only in such a case that the question for decision becomes "a matter of law" so that it may properly be determined by judges and not by the jury. The following cases illustrate the reluctance of a court to order a new trial where more than one jury has brought in verdicts, even though the court may disagree with those verdicts: *Goodwin* v. *Gibbons*, 4 Burr., 2018; 98 E.R., 100; *Swinnerton* v. *Marquis of Stafford*, 3 Taunt., 232; 128 E.R., 92; *Foster* v. *Steele*, 3 Bing., N.C., 892; 132 E.R., 654; *Foster* v. *Allenby*, 5 Dowl. P.C., 619; *Davies* v. *Roper*, 2 Jur. N.S., 167 and the note thereto.

In my opinion this litigation should be brought to an end by allowing the verdict of the fourth jury to stand, even though the members of this court may be of opinion that, if it had been their duty to decide the issues of fact involved they would have come to a conclusion different from that which has commended itself to the jury.

In the Supreme Court it was argued that the jury should have been directed that, because the allegation against the defendant could be regarded as a charge of misconduct which was criminal in character, the plaintiff's case must be proved beyond reasonable doubt. The learned trial Judge refused to give such a direction, and in my opinion rightly. I do not desire to add anything to the reasons stated by Davidson, J., in support of this view.

Objection was also taken to the conduct of plaintiff's counsel in criticizing the action of the British Medical Association and members thereof. As pointed out by both Davidson, J., and Halse Rogers, J., these references were provoked, at least to some extent, by counsel for the defendant. No application was made on behalf of the defendant for the discharge of the jury upon this or any other ground. In my opinion the learned Judge gave a direction to the jury which was sufficient to prevent the jury being misled as to the relevance of this or other matters.

I am of opinion that the appeal should be allowed, the verdict of the jury restored, and judgement entered for the plaintiff for £800.

The Judgement of His Honour Mr. Justice Rich.

This is an appeal from a judgement of the Supreme Court of New South Wales that judgement be entered for the defendant in an action for negligence. There have been in all four trials. At the first there was a verdict for the plaintiff, which was set aside on the ground that it was against the weight of evidence. At the second and third, the jury failed to agree. At the fourth there was again a verdict for the plaintiff. It is this which was set aside when judgement was entered for the defendant.

The case sought to be made on behalf of the plaintiff was that the defendant, who is a surgeon and had performed the operation of thyreoidectomy on her neck in March, 1938, negligently failed to remove from the wound a piece of rubber drainage tube, that this object moved about in the tissues of her neck, and that ultimately in October, 1939, it made its way through a tonsil into her mouth. She alleged that she suffered much illness and pain through its presence in her neck, from which she did not obtain relief until its removal.

For the defendant, it was contended in the Supreme Court that not only was the enormous preponderance of evidence against the plaintiff and in favour of the defendant, but that when the evidence given on behalf of the plaintiff was considered in the light of that given on behalf of the defendant no reasonable man could have regarded the former as sufficient to establish her case.

The evidence is lengthy, and has increased in snowball fashion as the result of the successive trials. I do not propose to analyse it or examine it in detail. I agree with the submission which has been made on behalf of the defendant that the plaintiff's story is so inherently suspicious and so highly improbable that it is difficult to understand how any jury could have accepted it. I agree also with the submission that the expert evidence called on behalf of the defendant was such that no one approaching it with un unbiassed mind could have failed to accept it, and to conclude from it that the alleged facts deposed to by the plaintiff not only did not happen but could not have happened. I feel no doubt about the cause of the miscarriage of justice which led to a verdict for the plaintiff. It was brought about by the deliberate raising of false issues by those who conducted the case on her behalf, and by the wholly unjustifiable vilification to which the defendant and his expert witnesses were subjected.

I feel no doubt whatever that the verdict cannot be allowed to stand. I equally feel no doubt that the order of the Supreme Court is the only one which will do justice, and should therefore be upheld unless some defect in the law of New South Wales prevents justice from being done. This is the only aspect of the case which has caused me any doubt. The question is as to the extent of the power of the Supreme Court of New South Wales to correct a miscarriage of justice in a judgement based on the verdict of a jury.

At common law, the verdict of a jury, and a judgement based on such a verdict could be set aside only in certain limited classes of case. In general it could be done only for a mistake in law. If it appeared on the face of the record that the judgment was erroneous in law, or if it appeared by a bill of exceptions attached to the record that the trial judge had made a mistake in law, the party aggrieved could maintain a new action, by a writ of error in the Exchequer Chamber, to reverse the judgement, and that Chamber would in a proper case reverse it and give the plaintiff in error any relief to which he was in law entitled, or direct a *venire de novo*, a trial *de novo*. A verdict of a jury could also be challenged otherwise than by proceedings in error. A *venire de novo* could be obtained from the Court in Banco for a defect in the verdict appearing on the face of the record; and a judgement *non obstante veredicto* could be entered for the plaintiff where the defendant had obtained a verdict on a plea which confessed and purported to avoid by matter which was no answer in law. A new trial would be granted by the Court in Banco for (*inter alia*) a material mistake in law of the trial judge to which objection had been taken at the trial. For a mistake of fact by the jury in returning a perverse or unreasonable verdict, the only remedy was a new trial. The Court in Banco had no power in such a case to substitute itself for the jury and itself make the finding of fact which in its opinion the jury should have made. In a case at common law which went to trial the parties were entitled to the verdict of a jury. A plaintiff could not be non-suited without his consent. The Court in Banco, if it set aside the jury's verdict, could not either enter a non-suit or enter a different verdict unless empowered to do so by a reservation made at the trial with the consent of the parties, actual or implied; it could at the most direct a new trial: *Heydon* v. *Lillis*, 4 C.L.R., 1223, at 1227; *Shepherd* v. *Felt and Textiles of Australia Ltd.*, 45 C.L.R., 359, at 379.

In England, the writ of error was abolished by section 148 of the Common Law Procedure Act 1852 (15 and 16 Vic., Ch. 76), and by the Rules of Court in the schedule to the Judicature Act 1873 (38 and 39 Vic., Ch. 77) it was provided by Order 58 that bills of exceptions and proceedings in error were abolished, that all appeals to the Court of Appeal should be by way of rehearing, and that that Court should have power to receive further evidence and should have power to give any judgement and make any order which ought to have been made, and to make such further or other order as the case might require. In its present form, Order 58 provides also that the Court of Appeal shall have power to draw inferences of fact. Order 58 applies to all cases, including those tried with juries: *Canada Rice Mills Ltd.* v. *Union Marine and General Insurance Co.*, 1941 A.C., 55, at 65-66. There have been dicta in the House of Lords suggesting that, in relation to a case tried with a jury, the language of Order 58 should be read in a restricted sense. I refer especially to *Toulmin* v. *Millar*, 12 A.C., 746, and *Mechanical and General Inventions Co. Ltd.* v. *Austin*, 1935 A.C., 346. In view, however, of the decision of the Court of Appeal in *Allcock* v. *Hall*, 1891, 1 Q.B., 444, and the observations of Lord Atkinson and Lord Parker in *Banbury* v. *Bank of Montreal*, 1918 A.C., 626, at 675-679, 706, I venture to think that the language of the order has the same meaning when read in relation to a case tried with a jury as when read in relation to a case tried by a judge alone. It confers on the Court of Appeal the same powers of correction in each case; and the dicta should be regarded not as showing that its powers are restricted in jury actions but as indicating considerations to which proper weight should be given when it exercises its powers; *Baird* v. *Magrigilis*, 37 C.L.R., 321, at 334.

In New South Wales, proceedings in error do not appear to have ever been formally abolished, and section 226 of the Common Law Procedure Act 1899 still expressly empowers either party to tender a bill of exceptions in an ejectment action, but there is no reported case of proceedings in error since 1857: *Australian Trust Co.* v. *Berry*, 2 Leggo, 992. Rule 150 of the Common Law Rules now provides that applications for various forms of relief, which include those formerly obtainable by proceedings in error, shall now be by notice of motion; and it is provided by section 7 of the Supreme Court Procedure Act 1900 that in any action if the Court in Banco is of opinion that the plaintiff or the defendant is as a matter of law entitled to a verdict in the action or upon any issue therein, the Court may order a non-suit or such verdict to be entered.

In the result, although in cases tried without a jury section 5 of the Supreme Court Procedure Act 1900 confers upon the Court in Banco the powers conferred on the Court of Appeal by Order 58, in jury actions section 7 leaves the hands of the court still tied as they were in England three-quarters of a century ago, and as they have not been tied there since. It follows that the form of order made by the Supreme Court can be supported only if it could have been supported in England prior to the year 1873. It is highly anomalous that in New South Wales the Court in

Banco should have less power to prevent a miscarriage of justice in a trial at *nisi prius* when the tribunal of fact is constituted by four laymen than when it is constituted by a judge; but we must take the law as we find it. It was pointed out by the Supreme Court of New South Wales in *De Gioia* v. *Darling Island Stevedoring and Lighterage Co. Ltd.*, 42 S.R., 1, at pp. 4, 5, that:

> The question whether the plaintiff's evidence, when considered in the light of an explanation (which cannot be regarded as seriously challenged) of doubtful or ambiguous features of it, is capable of constituting a *prima facie* case is one of law; and if the trial Judge rules wrongly on the point his mistake is one of law.
>
> On the other hand, if the stage is reached that a *prima facie* case has been made out, the question whether the jury should accept the case, or should accept rebutting evidence called for the defendant, is one for them, no matter how overwhelming the rebutting evidence may be; and the trial Judge must leave it to them. If the jury find for the plaintiff, and the full Court rules that the rebutting evidence is overwhelming, it is expressing the opinion that the defendant was, as a matter of fact, not of law, entitled to a verdict: *Wilton* v. *Leeds Forge Co.*, 32 W.R., 421; *How* v. *London and North Western Railway Co.*, 1891, 2 Q.B., 496, at 500-501. It cannot, therefore, enter a verdict in his favour, but can only order a new trial.

In my opinion this is a correct statement of the general law on the point as it now stands in that State. In the present case, there was no relevant part of the defendant's evidence which could be regarded as not being challenged on behalf of the plaintiff; and hence, *prima facie*, and if this were the first trial of the action, I think that we should not be justified in doing more than direct a new trial. But it is not the first trial; it is the fourth; and the course of the matter up to date sufficiently indicates that it is impossible to expect a reasonable result in such an action as this, whilst the law is in its present defective condition, if it is tried by a jury. A great part of the trials has been taken up with the elicitation and discussion of highly technical medical evidence, and no jury, common or special, could be expected to have a proper appreciation of specious arguments addressed to them upon the proper inferences to be drawn from such evidence, and no judge could be expected to be able to prevent the importation into the case of matter of improper prejudice. What course, then, is open to us? It is unthinkable that we should, from motives of expediency, allow justice to be thwarted by permitting a manifestly unjust verdict to stand. Is the Court then powerless? Must it, as was suggested by Pickford, L.J., in *Cooke* v. *Thomas Wilson, Sons & Co. Ltd.*, 114 L.T., 268, at 272, allow the series of trials to be renewed indefinitely, wrong verdicts set aside as often as they are given, and new trials directed until at last the only possible just verdict is returned? I think not. The Court has inherent jurisdiction to prevent a miscarriage of justice by abuse of its process; and the course suggested would be such an abuse. The case is very exceptional, and exceptional cases call for exceptional measures. In all the circumstances, I have come to the conclusion that, since the judgement appealed from is the only judgement that can produce a just result, it should be upheld.

I venture to think that this result might have been reached earlier if, after the first mistrial, sufficient attention had been directed to the provisions of section 15 (*b*) of the New South Wales Arbitration Act 1902, which provides that:

> In any cause or matter (other than a criminal proceeding by the Crown), if the cause or matter requires any prolonged examination of documents or any scientific or local investigation which cannot, in the opinion of the Court or a Judge, conveniently be made before a jury or conducted by the Court through its other ordinary officers, the Court or a Judge may at any time order the whole cause or matter or any question or issue of fact arising therein, to be tried before an arbitrator agreed on by the parties, or before a referee appointed by the Court or a Judge for the purpose.

In *Charles Osenton & Co.* v. *Johnston*, 1942 A.C., 130, at 144, Lord Wright expressed the opinion that, although the phrase "scientific investigation" would not include a large proportion of technical or expert evidence, such as that of a handwriting expert or an expert stevedore, it would, especially in modern days, cover a wide range of expert evidence, if that is based on scientific knowledge, such as that of medical or surgical experts.

For the reasons which I have stated, I am of opinion that the appeal should be dismissed.

The Judgement of His Honour Mr. Justice Starke.

Appeal from a judgement of the Supreme Court of New South Wales which set aside a verdict and judgement obtained by the appellant, Hocking, in an action against the respondent, Bell, and entered judgement in the action for the respondent, Bell.

The appellant in her declaration charged the respondent with negligence as a surgeon in performing an operation upon her and in such care and attention as was necessary consequential upon the performance of the operation. But particulars delivered under the declaration made it clear that the negligence alleged was not in the performance of the operation but in failing to remove a piece of drainage tube which had been inserted in the region of the throat during the performance of the operation, and the case was conducted on this basis. The particulars thus described the tube: "A piece of soft rubber tube about two inches long, greyish in colour and had the appearance of having been in water for some time. It was cut off straight at one end and torn at the other. On the side was a straight cut in which could be seen what appeared to be a swab and wire protruding from torn end of tube."

The action was tried before a jury, and a verdict was found for the appellant for the sum of £800. The jury made a special finding as follows: "We find that the defendant (the respondent) left in the site of the operation a piece of rubber tube of a length somewhat less than two inches, cut off straight at one end and torn at the other part of which tube had been cut down on one side and from which protruded some material which looked like wire and a swab from the torn end of the tube". It was this verdict that the Supreme Court set aside and entered judgement for the respondent; hence this appeal on the part of the appellant.

It appears from the evidence that the appellant was a patient of Dr. O'Hanlon, who deposed that in August, 1937, she was neurotic, neurasthenic and highly strung. He sent her to a specialist in skin diseases, who found that she was suffering from a condition called giant urticaria or angio-neurotic œdema, the predisposing causes of which are hysteria, neurosis, thyreotoxicosis and various exciting causes. But her condition did not greatly improve, and Dr. O'Hanlon sent her early in 1938 to Dr. Ritchie, an experienced consulting physician in Sydney, who examined the appellant and diagnosed a "severe case of thyreotoxicosis". He also said that the appellant was a highly strung nervous woman exhibiting most of the classical signs of thyreotoxicosis. Dr. Ritchie advised the appellant that her condition required surgical attention and he referred her to the respondent, who, as the trial judge said, "is a well-known surgeon of many years' experience", especially in thyreoid operations. The appellant was admitted into St. Luke's Hospital on February 22, 1938, and given a course of treatment to prepare her for the operation. On March 15, 1938, the respondent, Dr. Bell, operated upon the appellant and removed portion of the diseased thyreoid gland. This operation was well and skilfully performed and doubtless saved the life of the appellant. On March 17 Dr. Bell, according to the appellant, in the course of removing the drainage tube which he had inserted in the wound, broke it. But the appellant here must be allowed to tell her own story.

> Q.: After the operation do you remember Dr. Bell saying something about the tube?
>
> A.: Yes, he said the tube was not working and he would take it out, so he loosened some stitches and pulled the tube in his fingers, shook the tube and it did not come out and so he pulled a little harder and it still did not come, so he put his hand on my forehead and held the head back firmly and pulled and whatever it was came out. He said "Damn" and I said "Oh". He held it in his fingers for a second and I saw it—just a little dark piece of rubber—then he threw it into the tray and he and the sister turned around and left the room. I had a stinging sensation in the throat.

This story is strongly criticized and said to be inherently improbable. First that a skilled surgeon in order to remove a drainage tube should use considerable force. Ordinarily the difficulty is to keep the tube in position, and Dr. Bell, according to his evidence, secured the tube by one horsehair stitch and a safety-pin through the outer end of the tube. The stitch is just snipped with a pair of scissors on the removal of the tube, which is lifted out with a pair of forceps. It was suggested that Dr. Bell must have caught up the tube in some stitching necessary in the course of the operation: hence the necessity of using force to remove the tube. But the neck was in a very sensitive and

delicate condition at that time and any violence would break the wound down and tear the muscles or the tissues to which the stitches were attached and cause intense pain. And there was no practical difficulty in removing the broken tube. The wound had not healed and the patient could have been taken up to the operating theatre in proper sterile surroundings and the tube removed, using at most a little anæsthetic in the skin. True it is that a medical witness called for the appellant said that it would have been madness to go after the tube in the circumstances then existing, but fortunately that statement has little relevance to the case and is quite opposed, as experienced surgeons indicated, to elementary surgical principles. And the story is quite inconsistent with the report kept by the nursing sisters in the hospital. There is an entry on March 17: "Tube removed and three sutures". It is true that the nursing sister who was present when the tube was removed could not be identified, but Sister Will (now Helen Melville), who signed the report, stated the routine and the duties of the sisters. "The theatre (that is, the operating theatre) people say that the tube was put in and we have to see that it comes out. When the tube is removed, the sister with the doctor brings it to another sister, preferably the senior one, just to look it over and get it checked, to check that it is out of the wound. It goes into the report after the checking." And finally we find that Dr. Bell was in daily attendance on the appellant after March 17—and this is confirmed by the nursing sisters' reports—probing the wound to keep the drainage track open and dressing it himself or satisfying himself that the sister had carried out his instructions. All this conduct is inexplicable if any portion of the drainage tube remained in the wound to the knowledge of Dr. Bell or any of the nursing staff. The stinging sensation in the throat to which the appellant above referred she felt on the left side. And it is also important in the history of the case to observe that the appellant said that she had twitchings in her hands, pins and needles in the hands, which, according to medical evidence, is indicative of tetany. And tetany, also according to the medical evidence, is due to some disturbance of the parathyreoids in the course of an operation on the thyreoid gland and possibly also to inflammation set up by infection.

On March 16 the patient's temperature rose, and continued high until March 20, but gradually subsided. On March 20 "some thick purulent discharge" was expelled, and from that day onwards to the date of her discharge from hospital on April 14 some purulent discharge was noticed, though on April 12, according to the nursing report, the discharge was much less.

The appellant returned to her home in Quirindi, which is a considerable distance from Sydney. On April 30, 1938, she was seen by Dr. O'Hanlon, who found that the wound had healed except for a small sinus in the centre of the scar on the throat which was discharging freely sero-purulent matter, and round about the sinus there was definite inflammatory swelling. On May 14, 1938, he sent the appellant into the Quirindi Hospital, where he attended her. The wound was probed, kept open, and foments were applied. On May 9 the appellant was not so well, and according to Quirindi Hospital reports she had tetany spasms, and others on May 17. On May 10 Dr. O'Hanlon had reported to Dr. Bell that there had been a free discharge from the appellant's neck, that several pieces of suture material had been recovered, that after treatment with foments there was less discharge and she seemed generally better, though he thought the tetany worse, and he stated his treatment of the appellant. But the appellant at or about this time did not inform Dr. O'Hanlon or any of the attendants of the hospital that any tube had been left in the region of her throat. On June 9 the appellant was discharged from the Quirindi Hospital.

A nursing sister—Sister Sly—however, returned with the appellant to her home and remained with her for some five or six weeks. The wound in the appellant's neck had not quite healed when she reached her home, she suffered from spasms, her face and neck were very puffy and the hands were a little puffy. During this period the neck improved and, when Sister Sly left in July, the wound had completely healed and was not suppurating. Dr. O'Hanlon also saw the appellant frequently after her return to her home. And he states that all swelling round the neck had disappeared and the sinus had completely closed. But on June 27 the appellant had another spasm, which recurred.

On September 3, 1938, the appellant was readmitted to Quirindi Hospital in a tetany spasm, and she had another on September 4, 1938. Dr. O'Hanlon attended her and she was discharged on September 7, 1938. Dr. O'Hanlon continued to attend the appellant until about October, but did not again visit her until February, 1939. In January, 1939, in response to an inquiry of Dr. Bell, Dr. O'Hanlon reported that the appellant was improving slightly, that the major attacks, though not less frequent, were becoming less severe, and that she recovered more quickly, that she had frequent minor spasms which did not leave the muscles involved as sore as before. He added that the appellant looked well and that he could not help thinking that there was a big functional element in her trouble. On October 6, 1939, Dr. O'Hanlon was called to see the appellant, and her husband stated that on the previous Monday she had a severe tetanoid spasm—as severe as ever experienced. But let the appellant herself again take up the story, but not forgetting that the appellant is now speaking of an event that is said to have taken place some eighteen months after the operation and the removal of the drainage tube.

Q.: What is the date of your birthday?
A.: October 2 (1939).
Q.: Do you remember something happening about that time?
A.: Yes, for a while before that date.
Q.: That was your birthday. What happened?
A.: I was really seriously ill for quite a while before then. With the swelling in my face and neck and shoulder and my back. Well I looked like a hunchback, so swollen at the back of the shoulder and my neck was terribly swollen and my face and my eyes were almost closed. I had difficulty in breathing. I breathed mostly with my mouth open. I had a very nasty taste in my mouth like bad teeth or pus coming away.
Q.: Round about your birthday do you remember something happening? Did you have any spasms?
A.: Yes, on the Saturday and Sunday I was constantly drawn up with the tetany spasms. My muscles never relaxed once. I was closely drawn. They would give a little and I could straighten in bed, but sometimes my knees were drawn up. I was drawn up round. My back was bent up round. On the Monday I was really very ill. Round about 3 o'clock I did not think I was going to live any longer. I had my neck so bad. My husband came home round about then. I could not say exactly what time, and I had a coughing fit. I seemed to be choking. I started to cough and I swallowed something.
Q.: How was your mouth?
A.: I could not open or shut it. My teeth were close together.
Q.: You seemed to swallow something?
A.: Yes, and I took a terrific lurch and the muscles seemed to tighten up dreadfully hard. Something burst into the left side of my face. I felt something knock through as it were. I felt a sensation like something bursting. I had something on my tongue and I swallowed it whatever it was.
Q.: What happened after that? What was your condition?
A.: I was still very ill after that for quite a while.
Q.: Did you feel any sensation following that?
A.: I do not remember clearly, but I think next day I felt a sensation in the stomach; of course I felt something going down my stomach. It went very slowly. It seemed to move down my stomach.

The appellant took aperients and used a commode. The story goes on:

Q.: What did you do?
A.: I went back to bed after using the commode.
Q.: After some rest, what did you do?
A.: I rested quite a while. Then I got up and took the pan from the commode, and as I was taking it out in the light of the verandah I noticed something in it. I picked it out in my fingers. It was quite a startling looking thing. I took it out and squeezed it and as I did so a yellow-greenish pus ran down my fingers. I was holding it up in my left hand and I heard someone coming. I picked up the pan and went to tip it into the toilet. As I did I pulled the ring across my fingers so (indicating), that is the chain, and of course I am left-handed so to speak and I dropped this. I was leaning against the wall holding this in my finger, and with the nervousness it dropped out. The water was running as it hit the piece of tubing.
Q.: What happened?
A.: Well, it was washed away.

Q.: On that day did you make that sketch which I show you?

A.: Yes.

Q.: Whom did you give it to?

A.: To my husband.

Q.: Was that drawing to scale?

A.: Oh no! I did not intend it to be drawn to scale. It was a sketch to show my husband what I had seen. I did not know what it was.

Q.: Will you describe it generally? First of all you say you squeezed it. What was it like?

A.: The thing I had in my finger I would say a soft greyish piece of tube like a piece of rubber which had been in the water for some time. It was swollen. It was not smooth like a new piece of tube.

Q.: What about the shape?

A.: There was a straight cut at the end. It was split up within half an inch of the end and it had in that opening a swab which I thought was a piece of marine sponge with a blackish looking stuff. It had come from this sponge and it looked like black wire, but when I bent it it would fly back straight. It was like horsehair and it would fly back quickly straight. It looked like wire to me, but it could not have been wire.

The appellant's husband said that on this day (October 2) he remembered a most desperate spasm, that the appellant was almost black in the face and appeared to be choking, her teeth were locked, clenched, that he could not see inside the mouth, but by the action of the throat it looked as if something had come up into the throat. In cross-examination the appellant, I think, made it clear that the "something" which she spoke of burst through her tonsil on the left side, but whether that was made clear in her evidence is immaterial, for her case was conducted on that footing and medical evidence called on her behalf was directed to the same end. Dr. O'Hanlon, who, as already stated, had been called to see her on October 6, did not examine the appellant that night, and he did not then notice any external swelling or inflammation. The next day he examined the inside of her mouth back to the base of the tongue, but nothing was revealed, no swelling or any sign of an abscess. On October 7, however, he sent a report to Dr. Bell which was to this effect, that on October 6 he had been called to see Mrs. Hocking, who was complaining of a pain in her left chest and down the middle of the chest, that clinical examination revealed nothing definite; that Mr. Hocking had given him the following history: that last Monday the appellant had as bad an attack of tetanic spasm as she had ever had, complained of the neck, which was swollen, and until Wednesday complained of pain and soreness from the neck to the stomach; that swallowing was painful, that he thought she had symptoms of indigestion, and gave her castor oil, salts *et cetera*, that on the Thursday she had a bowel action and passed a piece of grey rubber tubing squarely cut on one end and ragged on the other, the tube was partially split up, and stuck in the lumen was what she took to be a small piece of marine sponge about which was twisted a piece of wire, that the appellant had emptied the tube along with the bowel action result in the W.C.

And he enclosed the sketch of the tube made by the appellant. Dr. O'Hanlon added that neither he nor Hocking saw the tube, but he thought that the appellant's description was too vivid for the article to be imaginary and that he was nonplussed when asked to explain it all. And he discussed the possibility of a piece of draining tube being accidentally left behind. Ultimately Dr. O'Hanlon in his evidence said that, after consulting books of reference and being satisfied that a surgeon like Dr. Bell would not leave a tube in a wound, he rejected the story. Dr. O'Hanlon, in his letter to Dr. Bell, also stated that the attacks of tetany had become fewer, but nevertheless, that the appellant was still far from well and very unsteady when she tried to walk. On October 11 the appellant herself wrote to Dr. Bell referring to "the piece of drain tube that was left in my neck", and suggesting that it was at the time she had a tetany spasm that the "tube burst into my gullet" and that she almost choked. On October 15 Dr. Bell wrote to the plaintiff saying that he had heard from Dr. O'Hanlon and found it difficult to explain her last illness or "the piece of drain tube" which she said had passed by the bowel, and he suggested the appellant should come to Sydney for medical investigation in order to see if some medical treatment could not be advised to improve her health. Accordingly the appellant went to Sydney, but Dr. O'Hanlon did not see her again before she left. On October 25 the appellant was admitted to St. Luke's Hospital. In hospital she complained of pain in the throat and chest, and inhalations were ordered. She was examined by both Drs. Bell and Ritchie. Dr. Bell found a superficial pharyngitis, which looked slightly red, but no swelling or any sign of ulceration of the throat or anything to suggest that anything had come through or burst into the throat. Dr. Ritchie found that there was very little wrong with the mouth and throat; that the appellant had mild tonsillitis on the left side. Dr. Marsh, an experienced throat specialist, was requested by Dr. Bell to examine the appellant's throat. He did so on October 30, 1939, and found no evidence of swelling, inflammation or anything of that sort, no sign of ulceration or scarring of the throat, no evidence of a "punched out hole in the tonsil" sufficient to let the tube through, nothing whatsoever consistent with the eruption of a tube through the tonsil or into the throat. But there was evidence of chronic follicular tonsillitis. He prescribed a well-known gargle, "Glyco-Thymoline", and a simple paint for the throat, which is confirmatory of his statement. Dr. Tebbutt, a pathologist experienced in blood tests, was also requested by Dr. Bell to make a blood test. He did so about October 28, and reported that the results showed no anæmia and no stained films, that the red cells showed no pathological changes, that reticulocytes were present in normal numbers, also platelets, and the leucocytes showed no significant pathological change. And his evidence affirms that the blood count was normal, that there was no evidence of any septic infection, and that the results he obtained were in no way consistent with the account given by the appellant of the eruption of a tube into her throat.

Dr. O'Hanlon saw the appellant again early in 1940. She came to his surgery and drew his attention to what she said was a scar at the back of her throat. Dr. O'Hanlon looked at it but all he could see was an elongated piece of lymphoid tissue on the posterior pharyngeal wall. He could see no hole in her throat nor a scar. Indeed he noticed no abnormality whatever, though he had no clear recollection of her tonsils, which had made no impression on him.

Now if this evidence be true, then no jury could reasonably make the finding of fact which the jury made in this case. And why was this evidence disregarded? It is that of a number of highly qualified medical men of physical conditions observed by them. To assert that the jury did not believe them is not enough unless some sound reason can be assigned for disbelieving them, or for concluding that they were mistaken. The suggestion that they were members of the British Medical Association who supported one another and denied assistance to any person attacking one of their members rests on no firmer basis than assertions in cross-examination of Dr. Thompson, a witness called for the appellant. The statement appears to have been used, and most improperly used, for the purpose of creating an atmosphere of prejudice. It looks as if Dr. Thompson is hostile to the British Medical Association, but his statement affords no rational ground for disregarding the evidence of Drs. Bell, Ritchie, Marsh, O'Hanlon and Tebbutt. But it is contended that the evidence of the appellant and her witnesses, particularly the medical evidence called on her behalf, affords ample reason for disregarding the evidence I have mentioned and supporting the finding of the jury. And this leads me to consider other facts and circumstances surrounding and connected with the story told by the appellant.

No doubt exists that the appellant was a very sick woman when the operation was performed. And no doubt exists that the wound made in the course of the operation became infected and was discharging sero-purulent matter until about July, 1938, when it healed and closed. And there is also no doubt that the appellant suffered from spasms of a tetanoid character which began soon after the operation and were persistent until the beginning of October, 1939. It is, I think, unimportant whether these spasms were due to some disturbance of the parathyreoid glands in the course of the operation, and infection of the wound, as seems probable, or were due in some degree and at some times to functional or hysterical conditions. I have already stated and commented upon the appellant's story relating to the removal of the tube.

Some other statements by the appellant also deserve attention. One, that the tube had been inserted on the right side of the throat a little to the side, to the right side of the middle. The importance of this statement I shall deal with later. Another, that in the broken tube there was a swab which she thought was a marine sponge. Sponges are no doubt used in surgical operations, but it is a matter almost of common knowledge how carefully they are counted and checked. But in this operation on the appellant no sponge was in fact used; gauze squares were used for washing out the cavity or for stopping bleeding points.

There is no confirmation whatever in the evidence of the appellant's statement.

Still another that the material that protruded from the tube looked like black wire, was like horsehair and flew back straight. The suggestion that it was like horsehair was made, I gather, on the present (the fourth) trial of this case, and not before. And the appellant said that she had a sensation in the stomach, something sticking in her, something pricking and scratching in her stomach. And it is to be noted that whilst the appellant was in Quirindi Hospital in May and June, 1938, she said that on one occasion she turned her head towards the left, something stuck in her throat and it started to bleed and that she wiped the blood from her chest with cotton wool and threw the wool in the fire. But this incident, which I suppose is a suggestion in support of the appellant's main statement, was never reported, strangely enough, to Dr. O'Hanlon or to the nursing staff of the hospital. And there is the critical statement that something burst into the left side of her face—something knocked through, as it were—something on her tongue which she swallowed. Two medical witnesses were called on her behalf, Professor Welsh and Dr. Thompson. Professor Welsh retired from the chair of Pathology in the University of Sydney in 1936. He had much knowledge of the thyreoid gland and those afflictions which centre around that gland, but he did not profess to be an authority on the technique of a surgical operation for thyreoidectomy. The other, Dr. Thompson, has practised in Sydney as a physician and surgeon for many years. Both have high academic qualifications but neither have had large experience in the operation known as thyreoidectomy.

During the first trial of this action—December, 1941—that, it is to be observed, is some two years after the appellant said something had burst into the left side of her face, Professor Welsh stated that he had examined the left tonsil and that "there was a distinct shallow oval depression about half an inch in diameter and about one-eighth inch deep and a distinct scar at the foot of that depression. The tonsil was very ragged, strips of tonsillar tissue were running from the tonsil to the back of the throat which indicated some kind of volcanic eruption had taken place from the tonsil, it was consistent with an abscess having burst from the tonsil". In August, 1942, he also had a visual examination, and in about the beginning of December, 1943, he saw a probe put in the tonsil by Dr. Thompson and pass right through the tonsil to the back of the throat. Dr. Thompson also examined the appellant shortly before the first trial—December, 1941. In answer to the question "When you first examined the tonsil, what did you see?" he said, "Nearly at the upper end of the left tonsil there was a punched out canal. It was a quarter of an inch in diameter, three-quarters of an inch long going down to the pharyngeal wall through the tonsil. I ascertained the length with a probe and glass" (which he produced). He also said that what he saw was consistent with an abscess having burst through and consistent with a rubber tube having come through. Since that time he had made several examinations—half a dozen—but the canal had at the time he was giving evidence—December, 1943—considerably retracted. All this points to the bursting of some abscess about 1941 and not the bursting of an abscess in October, 1939, which must have considerably contracted by December, 1941. The observations of Drs. Bell, Ritchie, Marsh and Tebbutt in October, 1939, which I have already set forth, do not directly conflict with this evidence, for they refer to a time within a few weeks of "something bursting into the left side of the appellant's face". But the observations of Dr. Thompson cannot be reconciled with the observations of other medical witnesses though I do not think those of Professor Welsh are so clearly inconsistent with those other observations, for he only speaks of a distinct shallow oval depressior. on the left tonsil one-eighth of an inch deep and a distinct scar at the foot of that depression.

About December of 1941 at the first trial of this action Dr. Poate, a highly qualified surgeon who has specialized in operations connected with the thyreoid gland, examined the appellant's throat in court. In answer to the question "Was what you found in the throat consistent or inconsistent with her (the appellant's) story?" he answered: "Entirely inconsistent with her story. She had evidence of chronic inflammation at the back of the throat. Both tonsils were involved in what is called chronic tonsillitis and in this area in the left tonsil there was a crypt or the orifice of a main crypt of the tonsil. The tonsil at the right side was not exactly a mirror picture, but closely resembled the one on the left side in its general appearance. She had what is called chronic follicular tonsillitis."

In August, 1942, Drs. Marsh and Steel, who is also a specialist in connexion with the ear, nose and throat, examined the appellant with Dr. Thompson. Dr. Marsh said there was a shallow opening in the left tonsil which he was sure was the entrance to the supra-tonsillar fossa or the large crypt, and there was no hole in the tonsil as was suggested by Dr. Thompson. Dr. Steel found a condition of ordinary chronic follicular tonsillitis, which is a condition in which the crypts—the small recesses which pass down into the tonsil—have become chronically infected and débris or unhealthy material collects in these crypts and is visible on examination.

On December 11, 1943, the appellant was again examined by Drs. Poate, Edye (an experienced surgeon), Marsh and Steel. Dr. Thompson was also present. Dr. Marsh was of opinion that the condition of the tonsils had become worse since he saw them in October, 1939, but all agreed that the appellant had what is called chronic follicular tonsillitis, and all denied in substance that there was a "punched out canal" such as Dr. Thompson described, though they did observe the "superficial shallow opening of the large crypt". Dr. Thompson pointed, said Dr. Edye, to a small opening in the upper lobe of the tonsil, a slit-like opening about a quarter of an inch long with a little strand of tissue across it which he described as the hole through which the tube had come, and all but Dr. Thompson agreed that this was the supra-tonsillar fossa or the large crypt of the tonsil.

It is of course true that matters of fact cannot be determined merely by the number of witnesses opposed to one another but by the quality of the evidence. But in this case both number and quality are undoubtedly on the side of the defendant.

Other matters that require consideration are the anatomical and surgical features involved in the appellant's case. It will be remembered that the appellant stated that the drainage tube was inserted on the right side of her throat—a little to the right, and she identified the spot by a scar on the throat. According to Dr. Thompson a tube placed on the right side could not effectively go into the right lobe of the thyreoid gland because it would kink, but no difficulty would arise if it were inserted obliquely across the trachea so that the outer end was on the right and the inner on the left, and he referred to a text-book in support of his statement. Dr. Poate explained that the illustration given in the text-book was an old-fashioned idea in which the tube was not put in the incision but in a special incision above the breast bone. Naturally in that case to get into the thyreoid cavity the tube had to go obliquely upwards, but it was not put through the wound. A tube put in across the trachea would cause irritation and the point would be sticking into the muscles on the other side at the back. Dr. Poate and Dr. Edye, surgeons who had performed a great number of operations on the thyreoid gland, said that no practising surgeon would dream of putting in a tube in the fashion suggested by Dr. Thompson; indeed Dr. Edye said it would be ridiculous. Dr. Bell himself could not remember on which side of the trachea he had inserted the tube but thought it would be on the right side on account of having trouble on the left. The tube, he said, goes to one side or other of the trachea about the middle line:

> Q.: You must push it to the right if it is on the right?
> A.: Yes, and if it is on the left it might go to the left of the trachea, but it must not go straight into the trachea or up in the air or down that way (indicating). You just push it inside the cavity, not to the bottom of the cavity.

There is no evidence whatever that Dr. Bell inserted the drainage tube in a manner opposed to surgical practice and that has manifest drawbacks. But it is necessary for the appellant's case that the tube crosses the trachea if it or a portion of it is to reach the left tonsil. This difficulty is on the threshold. The case made for the appellant was that the wound made in the course of the operation had become infected and was discharging thick purulent matter or pus. The broken tube, it was suggested, became embedded in this purulent matter or pus, as in a bath, and might be carried wherever the pus happened to travel, anywhere in the neck. Both Professor Welsh and Dr. Thompson agreed that this was a possible view. Dr. Thompson said that it was not only possible under the circumstances, but the most likely thing to have happened: towards the close of the case he became more emphatic:

> Q.: Did you take it that there might have been a tube there?
> A.: I know there was. There is no doubt about that.
> Q.: You know there was?
> A.: I do.

Q.: Have you got second sight?
A.: No, it is as plain as a pikestaff.

Professor Welsh in his evidence in chief gave the following evidence:

Q.: Assume that the wound healed over, what could happen to the tube? I mean could it go to the tonsil?
A.: Yes, but a great many things would happen before it got there.
Q.: Would you describe the processes that would come about before that happened?
A.: The object you mentioned could be carried in the pus that had accumulated within the thyreoid capsule wherever that pus happened to travel. That pus could travel anywhere in the neck.
Q.: Anywhere in the neck?
A.: Yes, anywhere in the neck.
Q.: Is there any particular likelihood whether it would travel up or down?
A.: In my experience of infection of the neck the infection usually spreads upwards.
Q.: Has gravity got anything to do with it?
A.: Very little influence in the neck.
Q.: How does the infection spread?
A.: It usually spreads between the various structures in the neck, each little structure, each muscle and the thyreoid gland itself, and a group of big important vessels in the neck are enclosed in what is called a fibrous capsule and the inflammation and suppuration usually spreads by separating these structures along these fibrous capsules opening up the spaces between them, what we call the fascial planes. One has to imagine each little structure like a muscle or gland enclosed in a band or sheath of that fibrous tissue and the tendency of the suppuration is to spread up between these and of course to carry any foreign body with it.
Q.: Would there be anything to prevent it going to the tonsil?
A.: No, nothing serious to prevent it going to the tonsil.

In anatomy a fascia is described as a thin sheath of fibrous tissue investing a muscle or some special tissue or organ, an aponeurosis (see New English Dictionary edited by Murray). However Professor Welsh conceded as a general statement that suppuration followed the line of least resistance, and that when there is an opening through which pus is discharging the tendency of any foreign body is to be carried towards that opening with the pus. The drainage track, as we know, in this case, was open from the time of the operation in March, 1938, until it closed in July, 1938, and during that period the track was being probed and kept open and fomenta were being applied from time to time. Yet the broken tube was not discharged with the pus coming from the wound, nor did the material "which looked like wire" protruding from the broken tube become visible. All this is inconsistent with the presence of a broken tube in the wound. Professor Welsh also conceded that the broken tube would have to change its course to reach the tonsil. This is his evidence:

Q.: What you are saying is that this thing has to go up the neck and has to get up beside the tonsil?
A.: That something of which (the appellant) regards . . . as a rough representation has to do that.
Q.: Then it has to turn at right angles to come out the tonsil?
A.: Then it is embedded in an abscess of the tonsil and, yes, it would have to turn.
Q.: It would have to turn at right angles to go through?
A.: Yes.
Q.: So, according to you, you have a path up the neck turning at right angles and going through the tonsil?
A.: It would not necessarily go at right angles; it would be at an angle.
Q.: And you really suggest that is possible?
A.: I really suggest that this is possible on the evidence.

Certainly the broken tube was very discerning. Moreover, the progress of this broken tube was extraordinarily slow. The infection appears to have remained more or less dormant or quiescent from July, 1938, when the drainage track closed until October, 1939, when the tube burst through the tonsil. And all this time the tube was lying, apparently, in an accumulating body or bath of pus. Apart, however, from these considerations there is a strong body of evidence consisting of professors of anatomy and pathology, of physicians, surgeons and throat specialists who dispute the conclusion of Professor Welsh and Dr. Thompson both on anatomical and surgical grounds.

The anatomy of the neck, so far as it was relevant to this case, was given by Professor Shellshear, Research Professor of Anatomy within the University of Sydney, and by Dr. S. A. Smith, who had been a lecturer and demonstrator and acting Professor of Anatomy within the University of Sydney. It appears from their evidence that the neck in the region mentioned is a very compact structure. All the important organs are held closely together and there is just sufficient looseness to enable the various movements of the head and neck to be made and to enable the gullet to perform its function in swallowing. Fasciæ, as Professor Shellshear said, surround every structure practically in the body. They surround arteries, veins nerves and muscles and also stretch across the spaces between muscles and are generally found in the lines of movements. In the part of the neck, important in this case, there are no spaces, but there are compartments. The gullet, the windpipe and the thyreoid gland, and all the arteries and nerves associated with those structures are in what is called the visceral compartment of the neck. Another compartment contains a complicated set of muscles which have as their function the movement of the tongue and the jaw. They are densely packed together. The carotid artery, the jugular vein, the vagus nerve are in a third compartment called the vascular department. The structures are held together by a strong fibrous network. So, as Dr. Bell said, the neck contains in a small area a number of vital structures. But apparently none of these vital structures was injured. Professor Inglis said that all structures destroyed by suppurative process are replaced by fibrous tissues, so far as the destroyed part is concerned, which have no power of contraction:

Q.: Take the fascial planes: if they are destroyed, what are they replaced by?
A.: They are themselves fibrous tissues and if they were destroyed fibrous tissue would be present there, but instead of having a normal arrangement they would be arranged irregularly.
Q.: Could you have destruction of the fibrous tissue without an object like that present without destroying the muscles which are enclosed in the fibrous tissue?
A.: I would think not. I would expect the muscles to be involved as well as the fibrous tissue covering them.
Q.: You have seen this lady in court giving her evidence on a former occasion?
A.: Yes.
Q.: You saw the movements of her head?
A.: Yes.
Q.: What would you say as to her appearance and her capacity to move her head as being consistent or inconsistent with her story?
A.: I would expect there to be too much contraction of fibrous tissue to permit that degree of freedom of movement.

It is conceded, I think, and in any case it is clear, that a body such as is described by the jury would not move of its own effort; it is inert. The object could not travel otherwise than in the cavity of an abscess. The abscess must have been of considerable magnitude to hold such an object. And while the inflammatory condition existed the patient would, as Dr. Poate said, have run a continuous temperature, there would be intense pain, distress in swallowing and breathing, and the patient would be desperately ill. No doubt the appellant was ill during the period in question, her neck was somewhat swollen according to the evidence. She suffered pain and had spasms, but her condition was not, I think, anything like that depicted by Dr. Poate.

This medical evidence was given at great length and cannot be summarized. It must be studied with care with the text-books and diagrams to which reference was made in order that it may be understood and fully appreciated. But I think I have sufficiently stated its main features. This evidence demonstrates how opposed to professional knowledge and how unreasonable—if not impossible—is the assertion that an object such as found by the jury was carried forward some two or three inches in an abscess, necessarily of great magnitude, through the dense fascial sheets or sheaths surrounding the structures already mentioned, and which in truth form barriers to the movement of any such object, without attacking, destroying or injuring those structures and the fascia covering them. And yet none of these structures or the fascia appear to have been destroyed or injured. I have not omitted to look at the plates in Jamieson's "Illustrations of

Regional Anatomy" and in Quain's "Anatomy", to which we were referred, but these plates are diagrammatic and, as Dr. Bell said, structures and material are dissected out for the purposes of the diagram. No jury could reasonably, I think, make the finding that was made in this case. But it is not the number of witnesses that leads me to this conclusion, but the facts already detailed and the nature and quality of the evidence given by those witnesses.

I must not omit mention of the sketch the appellant drew of the object she saw in the pan and lost in the sewer. It was much relied upon at the trial. The appellant said that it was not intended as an exact representation as to size, shape and length of what she saw, but was about the same size. But if the medical evidence demonstrates, as I think it does, that it is beyond the bounds of reasonable probability or even possibility that such an object was carried in an abscess through the delicate regions of the neck and ejected through the tonsil into her mouth, then the sketch ceases to be of importance in this case and it must be attributed to the imagination of the appellant, who according to a strong body of medical evidence manifested many symptoms of hysteria, which is a very real and serious condition in itself. At all events, that, in the circumstances, is the most reasonable explanation of the production of the sketch. Professor Welsh and Dr. Thompson accepted without question the appellant's story and were, I think, more concerned with establishing its possibility than its truth. But the truth of the story is the first consideration and reasonably should only be accepted after consideration of the known facts and the anatomical and surgical knowledge of the day. In my judgement the Supreme Court was right in setting aside the verdict found for the appellant. But it was suggested that this Court should in its discretion restore the verdict although satisfied that it is against the weight of evidence or that the evidence is overwhelmingly in favour of the appellant. Some old cases were referred to, but, if as I think, the verdict was such as no reasonable jury could find and therefore perverse, then, as Pickford, L.J., said in *Cooke* v. *T. Wilson, Sons & Co. Ltd.*, 85 L.J.K.B., 888, at p. 897, the verdict ought to be set aside again and again as often as it is found on the same evidence. No doubt the course suggested would end this long litigation but only at the expense of justice and to my mind a grave miscarriage of justice. And this, despite the opinion of the Supreme Court on two separate occasions that a verdict for the appellant should be set aside.

The remaining question is whether a new trial should be granted or a verdict and judgement entered for the respondent. Under the Judicature Act and Rules judgement might, in a proper case, be entered instead of granting a new trial (*Banbury* v. *Bank of Montreal*, 1918 A.C., 626, at p. 706, and the cases collected in the Annual Practice 1943, under Ord. 58, r. 4, p. 1289). The Judicature system, however, has not been adopted in New South Wales. But the Supreme Court Procedure Act 1900, section 7, provides: "In any action, if the Court in Banco is of opinion . . . that upon the evidence the plaintiff or the defendant is as a matter of law entitled to a verdict in the action or upon any issue therein, the Court may order . . . such verdict to be entered". That section was considered in this Court in *Heydon* v. *Lillis*, 4 C.L.R., 1223, at p. 1227 *et seq.* Griffith, C.J., stated shortly the common law procedure and proceeded: "Bearing in mind the previous defects in the law which had been remedied nearly everywhere else but in New South Wales, what was the intention of the legislature? . . . If the jury give a perverse verdict in favour of the defendant, the plaintiff may move to have a verdict entered for him; if they give a perverse verdict in favour of the plaintiff the defendant may have a verdict entered for him . . . If the Judge ought to have directed a verdict for the plaintiff or the defendant, the Court may order a verdict to be so entered." A perverse verdict as used by the Chief Justice means, I take it, a verdict that a jury could not reasonably find on the evidence (cf. 11 App. Cas., at 153-155). The authority given by the section should only be exercised in clear cases, but I regard this case as of that character. There is no evidence if the evidence is such that a jury on that evidence could not reasonably find the challenged verdict (*Ryder* v. *Wombwell*, L.R. 4 Ex., 32).

The question is not whether there is a scintilla of evidence to support the verdict—not whether there is literally no evidence; but whether there is evidence on which the jury could reasonably find its verdict. But a distinction is drawn between a case in which there is no evidence to support a verdict and a case in which the verdict is against the weight of evidence. In the latter case the verdict is not disturbed unless the jury, viewing the whole evidence reasonably, could not properly find it (*Metropolitan Railway Co.* v. *Wright*, 11 App. Cas., 152). The remedy in such a case is a new trial, for the case is not one in which there is no evidence, but of some evidence on which the jury, viewing it reasonably, could not properly found their verdict. The distinction is fine, but it is well enough established.

In the present case the Supreme Court was justified in my judgement, in concluding that there was no evidence on which the jury could reasonably find a verdict for the appellant and in applying the provisions of section 7 of the Supreme Court Procedure Act 1900.

This appeal should be dismissed.

The Judgement of His Honour Mr. Justice Dixon.

During the course of this protracted litigation, the evidence has been examined by many judges, but I believe that it has produced the same impression upon the minds of all of them. There has not, I think, been one of them who, if the responsibility of deciding the facts had rested with him and not with a jury would not have found unhesitatingly that the defendant did not leave a piece of tubing in the wound in the plaintiff's neck. If I myself were a tribunal of fact I should feel much confidence in that conclusion. But two juries have already returned verdicts for the plaintiff based upon the opposite finding and two others have failed to agree on a verdict. Besides returning a general verdict for the plaintiff, the last of these juries stated specially and expressly what, in its opinion, the defendant had left in the wound. The jury found that he left in the site of the operation a piece of rubber tube of a length somewhat less than two inches, cut off straight at one end and torn at the other, part of which had been cut down one side and from which protruded some material which looked like wire and a swab from the torn end of the tube. The Supreme Court of New South Wales considered that such a finding ought not to be allowed to stand, and the majority of the court went the full length of directing that, notwithstanding the finding of the jury, a verdict should be entered for the defendant.

It is evident that the question whether, in spite of the very strong opinion formed by the judges who have considered the facts, the jury's verdict should prevail is one that depends upon the respective provinces of the court and of the jury in matters of fact. The principles which determine those provinces are well settled and the courts are often called upon to apply them. But the tests by which, under the principles, the validity of a verdict must be tried are necessarily expressed in a general form and must be flexible in application because of the infinite variety of circumstance arising.

Familiarity with this kind of question does not therefore seem to lessen the difficulties involved in saying whether a given case lies within the exclusive provinces of the jury. Moreover, in New South Wales the law has not been reformed as it has been elsewhere in the Empire by authorizing the Full Court before which a verdict is impugned to draw inferences of fact and make such order as the case may require, so that, as has been held in England, when the court has all the facts before it, after setting aside a verdict as being against the weight of the evidence, the court may enter judgement for the other party if they think that a new trial could bring to light no further material facts and to do so will do complete justice between the parties.

In New South Wales the power of the court to enter judgement contrary to the actual verdict of the jury is limited to cases in which the party against whom the jury has found is entitled as a matter of law to a verdict. Otherwise, in New South Wales, "a general verdict can only be set right by a new trial; which is no more than having the cause more deliberately considered by another jury, when there is a reasonable doubt or perhaps a certainty that justice has not been done" (Lord Mansfield, *Bright* v. *Evnon*, 1757, 1 Burrows, 390, at p. 393; 97 E.R., 365, at p. 366). "But to this there is a limit. Juries may baffle the court by persisting in the same opinion, and in such cases it has been the practice for the latter ultimately to give way." (Forsyth "History of Trial by Jury" (1852), p. 191).

In the circumstances of the present case for the defendant to be entitled as a matter of law to a verdict it must appear that upon the evidence adduced no reasonable man could be satisfied that he had left a piece of tubing in the plaintiff's neck, but it would be sufficient to enable the court to order a new trial if on the whole evidence, notwithstanding some conflict therein, the contrary conclusion appeared to be the only one which could justly and properly be reached by men who understood their duty and applied themselves faithfully to its discharge.

But, before discussing the operation of these respective tests or standards in relation to the verdict given by the jury for the plaintiff in the present case, it is necessary to state what in my view are the more material considerations arising upon the evidence. The general circumstances of the case have been recounted judicially so often in the course of the litigation that I forbear from restating them.

In the first place, it appears to me that the greatest importance must be attached to the plaintiff's direct testimony, not for its inherent probative strength or plausibility, qualities not very conspicuous upon the printed record, but because it is direct evidence, personally given before the jury, of facts which, if true, provide a strong circumstantial foundation for her case. If the piece of tubing with the protruding wire-like material and swab as described by the jury's finding did in fact pass through her alimentary and intestinal tract and was evacuated on October 5, 1939, as she describes, and if on October 2 she had all the sensations to which she swears of swallowing a foreign body bursting from her pharynx, then unless some other explanation of its entry into her body appeared to be open, a very strong foundation for her case would exist. Its strength would be so great that it would be natural, and, I think, not unreasonable, for a jury to treat the conclusion that the tubing was left in the site of the operation as too clear to be overcome by scientific expert evidence of the impossibility or improbability of a broken piece of tubing finding its way from the enucleated capsule of the thyreoid gland, whether right or left, through the left tonsil. I say this at the outset, in order to make it clear that, as I see it, the basal question is the truth of the plaintiff's testimony. If you add to her account of what occurred on October 2 and 5, 1939, her evidence of the force used by the defendant in removing the tube, on a date which must have been March 17, 1938, evidence which fell little short of describing the actual breaking of the tube, and if then you take into account, in addition, her evidence of the progress of her illness and her descriptions of her symptoms, particularly of the swelling of her neck, you have a narrative which, if true, would make a very formidable case indeed.

It appeared in evidence that on October 3 and 6, 1939, she described what had happened on October 2 and 5 to her husband and to the general practitioner then attending her, and drew a diagram of the tubing which, among other things, depicted part of a diamond slit such as would have been made in the tube used at the operation.

It is, I think, important to keep in mind that the real question governing the determination of the issue must have been whether, in face of the other evidence adduced, the plaintiff's testimony could and should be treated as substantially correct. For though, no doubt, it is logically conceivable that what the plaintiff says she experienced and observed may be susceptible of some other explanation, so far no hypothesis seems to have been put forward consistent alike with her testimony and with the removal by the defendant of the entire tube.

There is no question in a trial that is regarded as so clearly within the exclusive province of the jury to decide as the reliance to be placed upon the evidence of a witness whom they have seen and heard. The fact must therefore be faced, that however little faith we as judges may have in all this, yet before the defendant can be entitled as a matter of law to a verdict he must so utterly destroy the plaintiff's narrative as to place it outside the competence of a jury to give any credence to the material parts of it, a thing which in my experience I have never seen done with reference to direct oral testimony given upon a civil issue.

The defendant certainly constructs an extremely strong argument of fact for rejecting the plaintiff's story and for concluding affirmatively that no piece of tube remained in her neck. One somewhat paradoxical feature of her case is that its substance gains strength as her description of the object she says she saw, after she evacuated it, is discounted. If it were possible to suppose, as plainly the two medical witnesses she called as experts wished to do, that she was mistaken in her estimate of its size and in ascribing to it wires, or things that looked like wires, and a swab, it might be easier to overcome the reluctance to believe that such an object could have been discharged through the tonsil after proceeding from the cavity whence the thyreoid had been removed, or partly removed.

The finding of the jury has made some modification of her account of the object recovered. But the defendant is warranted, at all events upon the question whether there should be a new trial, in beginning with the hypothesis that, as the jury say, it was a piece of tube "somewhat less than two inches", and that there was some material that looked like wire protruding and a swab or, at least, something that looked like a swab. The size is of great importance, and the very indefinite statement of its length in the finding can scarcely mean less than an inch and a half. Horsehair strands might be considered to look like wire, but none was used. Whether gut could be mistaken for wire after such a length of time in the body, even if undissolved, seems more than doubtful.

The defendant adduces affirmative evidence, supported by the probabilities, that, at the time of the operation, sound new tubing was in use and gut, not wire stitching, and that no swab would be inserted in the tube. He proves that the tube was placed with its orifice slightly on the right side of the middle line of the plaintiff's neck, and he adduces strong evidence supported by all the probabilities that the tube would therefore be placed on the right side of the trachea and in the cavity or capsule whence the right lobe of the thyreoid was enucleated. Strong and cogent evidence is then given by surgical, medical and anatomical witnesses of high standing and attainments to the effect that the anatomical difficulties of a broken end of tube passing from the right capsule of the thyreoid across to the left tonsil and coming through the left tonsil as alleged were insuperable. Even assuming that the tube had been placed in the left capsule, the broken end would need to work through the membrane forming the capsule and then proceed within the pharyngeal wall to the tonsil, but on the inside of the superior constrictor. No pathological explanation would, it was said, account for either phenomenon. Numerous works of reference were produced in support of these views. At the trial by agreement they were treated as in evidence.

There is, I think, much danger of our misconceiving and misapplying the anatomical, surgical and medical treatises and plates, but I am bound to say that, so far as I have been able to master the relevant information they contain, it seems to me to show that many difficulties must be encountered by any hypothesis which would explain what the plaintiff says happened with the piece of tube described. I cannot, however, imagine these treatises proving of any assistance to the jury.

In answer to the plaintiff's account of the forcible removal of the tube on March 17, 1938, the defendant points out that no force would be needed unless the tube was anchored by an accidental suture to a muscle or other firm tissue; that he could not sew through the rubber without knowing it; that the hypothesis is that the muscle or tissue did not give way, but the tube tore, the piece remaining anchored; that, if so, there would be much pain and hæmorrhage, although in fact there was no evidence of bleeding; that there were many gross improbabilities in any surgeon behaving as the hypothesis demanded that it should be supposed he had done on that occasion and thereafter; and that on her own account the plaintiff had said nothing about the incident, notwithstanding a long continued illness. Then, although the wound became infected, it cleared up and there was evidence that the condition of the patient in some respects was hardly consistent with the presence of so large a body in her neck. It was true that she developed a serious condition of tetany but that, according to much evidence, might be caused by interference with the parathyreoids or by a suppurative or infective condition around them without any foreign body, and its apparent long duration was consistent with an hysterical tetany or neurosis succeeding the true tetany. There was much evidence inconsistent both with the swelling of the neck which must, it was said, have accompanied the presence of the foreign body, and with the pus or abscess which was necessarily assumed in order to account for its movement. Some intermittent swelling proved was accounted for as angio-neurotic œdema.

An X-ray picture was made on October 7, 1938, and this, it was sworn, was hardly consistent with the experience she had narrated. The condition of her throat, as seen subsequently, was also inconsistent with the discharge of the tube through her tonsil. So too was her blood count taken on October 27, 1939. For it disclosed none of the indicia of a recently discharging abscess of some size, and yet the plaintiff's own case requires the assumption that such an abscess must have existed. Then, whatever else might be said of the sketch she made of the object recovered, it was pointed out that its firm outlines did not evidence the suffering she had so recently undergone if her account were true.

Finally, it was said that, on the plaintiff's theory, the movement in pus or suppuration of the piece of tube must have been

accompanied by an amount of destruction of the area through which it worked, inconsistent, if not with the plaintiff's survival, at all events with the whole history of her case, including the present condition and appearance of her throat and neck.

This very brief summary of considerations telling against the plaintiff's case, considerations that have been the subject of much elaboration by evidence, argument and exposition, leading into many ramifications of detail, will suffice to indicate the strength of the answer made by the defendant to the story told by the plaintiff, a story which, moreover, upon its face, many minds would be cautious of accepting.

But, on the part of the plaintiff a number of matters is put forward, both as impairing the force of some of the foregoing considerations relied upon by the defendant, and as giving confirmation and support to her narrative.

Much reliance was placed on the length of the period over which the plaintiff suffered acutely from tetany and from its disappearance after October 5, 1939. A calcium deficiency arising from a failure in the function of the parathyreoids produces tetany, and the parathyreoids might fail in their function because of removal, trauma, or infection.

The plaintiff's contention was that the presence of a foreign body would explain the obstinate persistence of the tetany. On the defendant's side, in the course of the proceedings, the theory was developed that, although in the beginning the plaintiff suffered from post-operative tetany, her later condition was to be ascribed to hysteria or a neurosis. The manner in which the theory was evolved, and the apparent inconsistency of the treatment prescribed by some of the medical witnesses who afterwards supported it, are used by the plaintiff as matters which the jury were entitled to take into consideration, both upon the issues and as affecting credibility. Further, hysteria or some such neuropathic condition might account for the plaintiff's putting forward her story, a view which seems eventually to have been adopted on the part of the defendant as preferable to an earlier hypothesis that it was simply a dishonest invention. The plaintiff contended that a jury might legitimately regard the readiness of the defendant and his witnesses to find in hysteria a new explanation, both of the plaintiff's tetany and of her story, as a further reason for distrusting his case.

As to her physical condition at the time when she alleges the passage of the tube took place, her husband supported her account. There was evidence too from a domestic worker that within a short time afterwards her throat showed pus, and that her neck was swollen. There was a conflict of evidence upon the condition which her throat exhibited at later stages. The medical and surgical expert called by the plaintiff swore that when he examined her two years after the incident he found in her left tonsil a punched out canal a quarter of an inch in diameter into which he inserted a probe for three-quarters of an inch. Other experts suggested that what he had seen was a crypt or the supra-tonsillar fossa, but this he vehemently disputed, saying that the fossa had been destroyed. The evidence of witnesses called for the defendant, men of undisputed qualifications and high standing, was not consistent with the deduction which the plaintiff's expert sought to draw, namely that an abscess had burst out of the left tonsil, thus explaining the passage of the piece of tube. Others who made later examinations also disagreed with him. But, it was naturally contended, that it was for the jury to say which view should be accepted.

To explain how it came about that a broken piece of tubing should be left in the wound, the hypothesis was put forward on the part of the plaintiff that the rubber from which the tubing would be cut, or the tube itself, had been softened and weakened through boiling, that in the course of stitching up the muscles after the operation a stitch had been passed through one wall of the tube and the diamond cut, that the removal of the tube had been effected at the expense of tearing off the end of the tube, that the condition of the patient had been unfavourable at the time for any surgical procedure to recover the broken piece, that the defendant had expected that in due course the stitching would dissolve and the tubing would be discharged through the sinus of the wound, and that when the plaintiff failed to get well and developed tetany, under which she continued to suffer, he was afraid to disclose what he knew about the breaking of the tube and a piece remaining in the wound. As a foundation for this hypothesis, reliance was placed on statements made in evidence as to the defendant's view of the probabilities of such a piece of tubing working out through the sinus of the wound.

Great stress was placed for the plaintiff upon the circumstances in which the sketch or diagram of the object found was produced by her. The nature of the sketch and the fact that she herself made it immediately after the event were said to be matters to which a jury might properly give great weight as confirming her story. How, it was asked, unless she had seen it, could she produce a sketch of the torn end of a tube with part of a diamond slit in it, just such as was in fact made in the tube inserted? The answer suggested for the defendant was that she might have learned that a drainage tube would be so slit from conversation with nurses or from observation during the long period she was a patient in hospitals.

Another consideration advanced for the plaintiff was the immediate effect of her story upon the general practitioner attending her. For it was plain that when on October 6, 1939, he heard her story of the passage and recovery of the tube, he was impressed with it as something not imaginary, and he did not feel that there was anything impossible or incredible in the supposition that a foreign body left in the wound accounted for her experience and the medical history of her case. His subsequent support of the defendant's case and the course he followed during the litigation and as a witness, were used on behalf of the plaintiff as discrediting his evidence. His earlier attitude was relied upon as something in which a jury might find guidance upon the question whether the plaintiff's case was really incompatible with anatomical and medical facts.

Then, some changes of ground, over the four trials, were attributed to the defendant and some of his witnesses. These were said to provide the jury with a further reason for distrusting his case. One such matter was the question whether the tube was inserted in the wound after the stitching was done, or whether there was some stitching round the tube after its upper end was placed in the enucleated thyreoid capsule. Another concerned the question whether unconsciousness was characteristic of severe tetany. A third was the attempt to explain the continued tetany as hysterical.

A contention of the plaintiff, which I think fails, is that the jury might place a construction inconsistent with his denial of the plaintiff's story upon the defendant's conduct in his dealing with the matter when he learned what she had said about the piece of tube coming from her throat and her swallowing it and passing it. I will not go through the details. It is enough for me to say that I do not think a jury could legitimately place upon the defendant's conduct the construction contended for. What he did is what might be expected of any experienced professional man confronted by a strange but circumstantial story which he believed to be without foundation, but which he could not account for except by the invention or the imagination of the patient.

A great difficulty in the plaintiff's case is necessarily the anatomical structure of the neck. The theory put forward on her behalf to meet it is that the piece of tube became encapsulated in an abscess, the activity of which varied, that the suppuration broke through the inner wall of the thyreoid capsule and that, in the visceral compartment, it passed under the middle constrictor muscle and through some areolar tissue between it and the superior constrictor, being contained within the membrane of the laryngeal and pharyngeal wall until it burst through the left tonsil. On my understanding of the matter, if I were the tribunal of fact, I should reject this hypothesis. But I am not the tribunal of fact. Because, doubtless, there are fewer difficulties if the remnant of the tube was on the left side, it is maintained for the plaintiff that it was in the left cavity that the tube was inserted. There is no direct evidence to support this allegation, and there are strong reasons for believing that the tube was inserted in the area that had been occupied by the right lobe of the thyreoid. But, even so, the thesis is maintained that the piece of tube made its way to the left tonsil, passing, as I understand the theory, in front of the trachea within the pretracheal fascia. Realizing, no doubt, the difficulties of this or any other theory, counsel for the plaintiff say that it is not incumbent upon her to show how the thing happened; it is enough for her to prove that it did happen, and to rely on the general observation that more surprising and unexpected things have been known to occur with reference to the human body.

However, the surgeon whom the plaintiff called as an expert besides expressing confident opinions in her favour concerning the pathological conditions contributing to the passage of the tube, and drawing from the circumstances many deductions of a medical and surgical character supporting her case, gave direct evidence that there was no difficulty whatever in the piece of

tube passing from the thyreoid cavity behind the fibrous and mucous membrane of the pharynx to the angle of the jaw where, he said, lay a triangle of tissue providing no obstruction.

The highly qualified witnesses for the defendant, who probably did not conceive of the possibility of such a course being followed, particularly by so large a foreign body, had excluded by their evidence almost every other possibility, and had deposed to the general impossibility of the passage of the tube to and through the tonsil. Their evidence is, however, open to the observation that on this question it appears very much to have been concerned with anatomical and pathological conditions outside the pretracheal fascia.

In the Supreme Court, Davidson, J., dismissed the foregoing theory propounded for the plaintiff, observing that the witness did not refer to the tonsil, that is expressly, and that at the triangle mentioned a thick fascial plane known as the pharnygobasilar fascia existed, lining the inner surface of the constrictor. But probably the witness would say that the abscess spread between that and the pharyngeal membrane.

The swab and the wire caused much difficulty to this witness and another expert called for the plaintiff, as appears pretty clearly from a reading of their evidence. The latter would not countenance the idea that in the form depicted the object had been used at the operation, but in many respects his evidence supported the plaintiff's case. The latter suggested that the "swab" was detritus picked up by the tube, and that what was called wire was in fact gut.

In the foregoing statement I have attempted to bring to a point, out of a vast mass of material, by no means easy to handle, the chief circumstances and considerations tending to prove or disprove the issue, as distinguished from the many subordinate matters of evidence affecting the details of proof and the credit of witnesses.

It is clear, however, that in all I have said I have been dealing with matters of fact, and that such views as I have expressed amount to comments on and conclusions from evidence. *Prima facie*, such matters are for the jury. Scientific evidence, even when composed in part of text books, is no less matter of fact within the province of the jury than is other evidence, and it is the jury's function to estimate the reliance to be placed on scientific witnesses however eminent.

Great as is the strength of the defendant's case, it remains true, as it appears to me, that there stands opposed to it the facts sworn to by the plaintiff and the evidentiary matters upon which she relies, either as supporting her case or detracting from that of the defendant, as well as much testimony given by her two expert witnesses.

To say that as a matter of law the jury were bound to decide the issue in favour of the defendant appears to me to be contrary to the conceptions upon which depends the distinction between, on one hand, the sufficiency of evidence as a question of law, that is as a question for the court applying legal standards of evidence and proof, and on the other hand the review by the court of findings made upon conflicting evidence or inference.

I cannot see how at the conclusion of the defendant's case it would have been possible for the judge to withdraw the issue from the consideration of the jury and direct them to return a verdict for the defendant or non-suit the plaintiff. No one suggests that at the conclusion of the case for the plaintiff he could have done so.

"The proper legal effect of a proved fact is essentially a question of law but the question whether a fact has been proved when evidence for and against has been properly admitted is necessarily a pure question of fact": *Waei Mohammad* v. *Mohammad Bakhsh*, 1929, 57 I.A., 86, at p. 92 (J.C.).

In the passage so often quoted from his judgement in *Ryder* v. *Wombwell*, 1868 L.R. 4 Ex., 32, at p. 38, Willes, J. makes in a sentence the distinction between the power of the court to control perverse or unreasonable verdicts by new trial, a power the exercise of which involves no question of law, and its duty to decide the question of law whether there is evidence which might reasonably satisfy the jury that the fact sought to be proved is established.

In England, where the Court of Appeal now has powers of reviewing the findings of a jury which do not exist in New South Wales, the difference between there being no evidence to go to the jury and the jury's verdict being against the weight of evidence has less importance than formerly: *per* Lord Parker, *Banbury* v. *Bank of Montreal*, 1918 A.C., 626, at p. 706. Lord Atkinson (*ibid.*, pp. 669-680) discusses the powers of the Court of Appeal, and in doing so maintains the distinction. See further *Mechanical & General Inventions Co.* v. *Austin*, 1935 A.C., 346, and particularly *per* Lord Atkin at p. 369, *per* Lord Wright at pp. 372-374.

But though in England the powers of the Court of Appeal are so extensive that they need not consider whether as a matter of law an appellant is entitled to the verdict, yet in relation to other jurisdictions and tribunals the question whether a party is entitled in point of law to a finding may be all-important, as for instance in the case of an appeal from a County Court or an attack upon an award of arbitrators or under a case stated.

In the case of *Driver* v. *The War Service Homes Commissioner No. 1*, 1924 V.L.R., 515; 30 A.L.R., 375, at p. 376 *et seq.*, Cussen, J., in reference to an application for an order that arbitrators state a special case, fully discussed the matter and collected the authorities. He ends his discussion by saying: "From these cases I conclude that where there is a real conflict of evidence, no question of law arises and that no such question arises even if the evidence is all on one side, if on that side is the onus of proof, but that the question whether there is or is not any evidence upon which there might properly be a finding in favour of the person upon whom is the onus of proof may be a question of law." See further *Shepherd* v. *Felt and Textiles of Australia*, (1931) 45 C.L.R., 358, at p. 373 and pp. 379-380.

What precisely Griffith, C.J., meant in *Heydon* v. *Lillis*, (1907) 4 C.L.R., 1223, by the expression "perverse verdict" in the passage to which my brother Starke has referred, I am not sure. Sometimes it is used to describe a disregard of a direction from the judge. Sometimes it refers to a finding contrary to that which the facts of the case legally demand. But I think it always means something more than a verdict against the weight of the evidence: *Saunders* v. *Davies*, 1852, 16 Jurist, 481, *per* Pollock, C.B.; *Jones* v. *Spencer*, 1897, 77 L.T., 536, at p. 538, *per* Lord Morris; *per* Kenny, J., *McInernay* v. *Clareman*, 1903, 2 Ir.R., 347, at p. 369. In any case, the meaning and effect of the terms used in section 7 of the Supreme Court Procedure Act are too clear and well settled to be affected by the choice of expression of the late Chief Justice.

For the reasons I have given I am of opinion that the course taken by the majority of the Supreme Court in entering a verdict for the defendant ought not to have been followed.

There remains what to my mind is the more difficult question, namely whether yet another new trial should be ordered.

In *Mechanical and General Inventions* v. *Austin*, 1935 A.C., 346, at p. 373, Lord Wright said: "For the appellate court to set aside the verdict of a jury as being against the weight of evidence, merely because the court does not agree with it, would, in my judgement, be to usurp the functions of the jury and to substitute their own opinion for that of the jury: that would be quite wrong. Much more is necessary in order to justify the setting aside of a jury's verdict where there is some evidence to support it. No doubt the test can be roughly described as being whether the verdict of the jury was reasonable, but what is meant by reasonable in this connexion must be carefully defined." And again (on p. 375) he said: "The question in truth is not whether the verdict appears to the appellate court to be right, but whether it is such as to show that the jury have failed to perform their duty. An appellate court must always be on guard against the tendency to set aside a verdict because the court feels it would have come to a different conclusion."

The test propounded by Lord Selborne in *Metropolitan Railway Co.* v. *Wright*, 1886, 11 A.C., 152, at p. 153, was approved by the Privy Council in *Cox* v. *E.S. and A. Bank*, 1905 A.C., 168, at p. 170, namely: "There must be such a preponderance of evidence, assuming there is evidence on both sides to go to the jury as to make unreasonable and almost perverse, that the jury when instructed and assisted properly by the judge should return such a verdict." An expression repeatedly used by courts is "overwhelming preponderance".

In *Place* v. *Searle*, 1932, 2 K.B., 497, at p. 315, Scrutton, L.J., said: "An enormously strong case is needed before the Court of Appeal can say that though there is evidence given by a witness it cannot reasonably be believed by the jury. Unless we get such a case as that, we must assume, in considering the question whether there is any evidence on which the jury could reasonably find a verdict for the plaintiff, that they accepted the evidence in favour of the plaintiff and disbelieved the evidence given in favour of the defendant", *scil.*, where such disbelief is necessary to the conclusion.

A distinction has always existed between cases on the one hand in which the verdict is vitiated by some legal error, such

as a material misdirection or misreception of evidence, or was perverse in the sense that the jury disregarded a judge's direction and, on the other hand, cases where, on conflicting evidence, a verdict is found which is said to be against the weight of the evidence. In the former case, apart from the modern rule about substantial miscarriage, a new trial was granted *ex debito justitiæ*. In the latter it was a matter depending upon a more general discretion.

According to Mr. W. M. Best in a note in 2 Jurist, 167, "Where a jury disregard a presumption of mixed law and fact, and *a fortiori* where they find in a particular way on a mere question of conflicting testimony all the authorities agree . . . that the granting of a new trial is only matter for the discretion of the courts which are moreover very cautious in the exercise of this power." For this reason the fact that a new trial has already been had with a like result to the first has been thought to be a relevant and an important consideration.

In *Goodwin* v. *Gibbons*, 1767, 4 Burrows, 2108; 98 E.R., 100, Lord Mansfield denied, however, that there was any general rule against granting a third trial, saying: "A new trial must depend upon answering the ends of justice". But the fact that there have been two concurring verdicts must carry weight. In *Foster* v. *Steele*, 1837, 3 Bing N.C., 894; 132 E.R., 654, Tindall, C.J., and Park, J., considered that the fact that the second trial produced the same result was decisive, whilst Vaughan and Coltman, JJ., said that they would try the result on a third "but if the third were against the defendant, then the proceedings should end".

In a case of misdirection a majority of this court ordered a third trial, stating the test thus: "To induce a court to order a third trial, the party against whom the verdict has passed must establish that the second trial took a course clearly prejudicial to him, and so erroneous that the verdict cannot justly be allowed to stand": *Australasian Brokerage Ltd.* v. *Australian and N.Z. Banking Corporation*, (1934) 52 C.L.R., 430, at p. 442.

It is consequently clear that the defendant assumes a heavy burden in undertaking to make out a case for a new trial. He seeks to strengthen the foundation provided by the facts of the case by two additional grounds of complaint. He says in the first place that the jury should have been directed that a higher measure or standard of persuasion is required by the law in the case of a charge of neglect causing bodily harm. Davidson, J., has shown that this complaint is ill founded. Indeed, even if the cause of action here amounted to an offence under section 54 of the Crimes Act 1900, our decision in *Helton* v. *Allen*, (1940) 63 C.L.R., 691, and *Briginshaw* v. *Briginshaw*, 60 C.L.R., 336, show that the contention cannot be supported. See too *Piggott* v. *Piggott*, (1938) 61 C.L.R., 378, at p. 415. The solid body of authority against introducing the criminal standard of persuasion into civil causes cannot be shaken by the unconsidered statement of Lord Atkin in the case from Allahabad, the report of which I have had the advantage of reading. Similar statements will be found elsewhere, and I think they are traceable to Article 94 of Sir Fitzjames Stephen's "Digest of Evidence". Unfortunately the influence of J. H. Wigmore's formidable learning and reasoning has not been felt as it should in this and other matters.

In the next place, the defendant says that the conduct of the case by the plaintiff's counsel was calculated to lead the jury to decide the case on false issues, and generally to distract them from their true duty.

Without denying that the lengths to which counsel went were such as to require weighing with the other elements in the case, it is, I think, necessary to remember that he was entitled to put strongly to the jury the relative positions occupied by his client and by the defendant, in obtaining the assistance of the medical profession; and, in the next place, that in the result the jury made a finding very carefully, indeed significantly framed, upon the exact issue of fact upon which the case depended—a finding expressed in a way which made it clear that their minds were addressed to the very issue.

After all, the fundamental question in the case is whether the evidence opposed to the plaintiff's case is so overwhelming that the court should again intervene to destroy the verdict as not only wrong, but as completely unreasonable and unjust.

In determining this question the most important consideration is that faith in the honesty of the plaintiff must be ascribed to the jury and an inability to believe that the woman they saw and heard was telling a purely imaginary story.

No doubt they could not reach that view without first weighing against it the very substantial case made by the defendant. But once belief in her as a witness and acceptance of the veracity of the witnesses called on her behalf is assumed, the evidence for the defence must wear a very different complexion. By that I mean that it must also be taken that the more valid criticisms of and contentions made concerning that evidence were accepted. On these hypotheses the verdict begins to wear much less an unreasonable aspect. The question of credibility and the estimate of the character and reliability of the witnesses is, of course, essentially a matter for the jury.

But their finding gives to the tubing a size "somewhat less than two inches", and that size is really very considerable in relation to the tissues involved. From the beginning, I have been struck with this statement and the reference to the material that looked like wire. If the jury had supposed that the plaintiff had been quite mistaken in her estimate of size, their finding would have gained strength.

But, as it is, after closely considering the plaintiff's evidence and the medical and other evidence called by her, I think that the matter is within the province of the jury.

There is, I think, when it is separated out, much evidence supporting the jury's verdict. The case is one in which the strong feeling that the jury's verdict is mistaken, based as it is on a natural incredulity concerning the plaintiff's story, and on the cogency of the countervailing evidence, makes it difficult to appreciate the amount of evidence really available to support the jury's finding. In such circumstances the decision rests with the jury, and if the result is unjust, theirs is the responsibility.

On the whole case I think that the court ought not to interfere and grant another new trial. I am therefore of opinion that the appeal should be allowed, the order of the Supreme Court discharged and the verdict restored.

The Judgement of His Honour Mr. Justice McTiernan.

At the last trial of this action a jury again returned a verdict for the plaintiff. The Supreme Court in Banco set aside the verdict and ordered that a verdict be entered for the defendant. This appeal is against the whole of the court's order.

The Supreme Court in Banco may, under section 7 of the Supreme Court Procedure Act 1900, in any action order that a verdict be entered for either the plaintiff or the defendant: it is not a condition of this statutory power, as it is of the common law power to enter a verdict, that leave was reserved at the trial to do so: *Heydon* v. *Lillis*, 4 C.L.R., 1223. Under section 7 the condition is that in the opinion of the court the party for whom it enters a verdict is on the evidence entitled as a matter of law to a verdict in the action. Instances of the exercise of this power are *The New Balmain Ferry Co.* v. *Robertson*, 4 C.L.R., 379; *Heydon* v. *Lillis* (*supra*); *Shepherd* v. *Felt Textiles Ltd.*, 45 C.L.R., 359. In the lastmentioned case this court approved an order of the Supreme Court for a verdict to be entered; in the other cases, this court decided that the Supreme Court ought on the evidence to have entered verdicts. In the present case the defendant is as a matter of law entitled to a verdict if there is no evidence on which the jury could reasonably return the verdict for the plaintiff.

There is a distinction between the power of the court in the case where there is insufficient evidence to justify the verdict and the case where the verdict is against the weight of evidence. In the latter case the court may set aside the verdict and grant a new trial, but it may not order a verdict to be entered; the Supreme Court of New South Wales has no power to decide facts in an action tried with a jury; hence in this case this court has not the power to decide facts. See *Hocking* v. *Bell*, 43 S.R., 154; *De Gioia* v. *Darling Island Stevedoring Company Limited*, 45 S.R., 5; and *Banbury* v. *Bank of Montreal*, 1918 A.C., 626, at 664. In that case Lord Atkinson observed, "No doubt in cases where the verdict is set aside as against the weight of evidence, there will be evidence on both sides, but now that the scintilla doctrine has been abandoned the tasks of the court in the two classes of cases closely approach each other. The "scintilla doctrine" was abandoned in *Ryder* v. *Wombell*, L.R. 4 Ex., 38.

Davidson and Halse Rogers, JJ., were of the opinion that there is no evidence on which a jury may reasonably find that the defendant left in the surgical wound a piece of the drainage tube that had been inserted in it, and for that reason the verdict could not stand. Roper, J., was of the opinion that the verdict ought to be set aside on the ground that it is against the weight of evidence and a new trial granted. After considering all the evidence I have come to the conclusion that the opinion of the majority is right and the order of the court should be affirmed.

But if it were not correct to hold that there is no evidence that ought or could reasonably satisfy a jury that the defendant left a piece of the drainage tube in the wound I should agree with Roper, J., rather than restore the verdict. If I thought that leaving out of account the contrary evidence, there is sufficient evidence *prima facie* to support the verdict, nevertheless I should reach the conclusion that, on the whole, the contrary evidence in point of probability, so greatly preponderates against the verdict that it is an unreasonable verdict and that the jury could not have performed their duty judicially and returned the verdict: *Metropolitan Railways Co.* v. *Wright*, 11 A.C., 152; *Mechanical and General Inventions* v. *Austin*, 1935 A.C., at pp. 369 and 374; *Bright* v. *Eynon*, 1 Bur., 395; 97 E.R., at p. 366.

It is an undisputed fact that no piece of drainage tube was found in any part of the plaintiff's body or taken from it. Notwithstanding the circumstantial story which the plaintiff gave of the breaking of the drainage tube, it would not be reasonable for the jury to infer that the defendant left a piece of tube in the surgical wound unless they were satisfied that the object which, according to her evidence, "burst into the left side of her face", was part of the drainage tube which had been inserted in the surgical wound, and that such object had moved out of the wound inside the neck until it emptied into the pharynx. The story seems to me to be a glaring improbability. Upon the evidence there are reasons why it was unreasonable for the jury to attach any credit or weight to it. These reasons depend upon the discrepancies between the object which she said she swallowed and evacuated, and the part of any tube which, upon the whole of the evidence on the question of the kind of tube inserted into the wound, could have been left in it, if the defendant had broken the tube and failed to remove the portion left in the wound. The plaintiff said in evidence that she examined the object evacuated, but lost it and then made a sketch which is in evidence. Her description in the evidence of the object is: "I would say a soft greyish piece of tube-like rubber which had been in water for some time. It was swollen. It was not smooth like a new piece of tube. There was a straight cut at one end. It was split up within half an inch of the end and it had in that opening a swab which I thought was a piece of marine sponge with a blackish looking stuff. It had come from the sponge and it looked like black wire, but when I bent it back it would fly back straight. It was like horsehair and it would fly back quickly straight. It looked like wire to me but it could not have been wire." The special finding of the jury was: "We find that the defendant left in the site of the operation a piece of rubber tube of a length somewhat less than two inches, cut off straight at one end and torn at the other, part of which tube had been cut down one side and from which protruded some material which looked like wire and a swab from the torn end of the tube."

The plaintiff's case is that the whole thing, that is, tube, swab and the protruding material, was left by the defendant in the wound. It is not suggested that the defendant put the swab into the tube as an element belonging to it. Such a thing would defeat the purpose of the tube; and the suggestion, if made, could not possibly be supported by the evidence. The jury does not specify what the "blackish looking stuff" in the plaintiff's description is. They say that it was "some material which looked like wire". The suggestion made to explain the swab and the protruding material is that a swab was caught by the stitches made at the time of the operation and that the protruding material is gut with which the stitching was done. The only evidence given in the case about the swabs used during the operation and the way in which they were used, and also about the method in which the stitches were made, provides no reasonable basis for any inference along the lines of the suggestion which is made. There is, in my opinion, no evidence upon which the jury could reasonably find that a swab with gut or any other material protruding from it was attached to the drainage tube which the defendant inserted in the surgical wound at the time of insertion or became attached to it afterwards. The evidence does not support the conclusion that the object described by the defendant, or by the jury in their special finding, was part of or comprised in that drainage tube.

The result is that the jury was left without any explanation which could be reasonably supported by the evidence, as to what became of the piece of drainage tube which would have been left in the wound if the defendant had broken the tube; admittedly no piece of tube was found in her neck or taken from it. In these circumstances the jury could not reasonably accept her story about the breaking of the tube or infer from it that the defendant left a piece of the drainage tube in the wound.

Assuming, however, that the abovementioned object was left by the defendant in the surgical wound, it was necessary for the plaintiff to prove that the object moved upwards, and ultimately entered the pharynx. The plaintiff called expert witnesses to prove that the object did so. For the purpose of their evidence they assumed that the defendant left part of a drainage tube in the wound but it does not seem that they were prepared to assume that what was left in the wound had the material like wire protruding from it; but whatever its characteristics, they also assumed, for the purpose of their evidence, that her story that she swallowed a piece of tube eighteen months afterwards was also correct. If the assumption is made that the thing left in the wound is the identical thing which the plaintiff said that she swallowed, the hypothesis which, upon the evidence of these witnesses the jury were invited to accept, was that pus accumulated in the thyreoid capsule where the internal end of the tube was, that is to say in the space which had been occupied by the gland before the thyreoidectomy; that instead of rupturing outwards and reopening the incision made in the neck, the abscess, consisting of the piece of tube and pus, ruptured the thyreoid capsule at a point contiguous to fascial spaces leading ultimately to the point at which the pharynx was penetrated; that it was carried upwards in pus through those spaces until it turned to the right and went through the pharyngeal wall. According to these witnesses the condition of the left tonsil showed that a tube went through the tonsil into the mouth. The hypothesis therefore requires that the foreign body penetrated the pharyngeal wall at the point opposite the left tonsil.

The pictures and drawings, which were put in evidence, representing the anatomy of the neck, show the arrangement of fasciæ, muscles and other anatomical parts through which the object in question must have passed if it went from the thyreoid capsule through the tonsil into the pharynx. Considering the size, shape and other characteristics of the object which is supposed to have moved through these parts, there are *prima facie* great difficulties in accepting the hypothesis that it did travel through them. The arrangement of muscles and fascia establish the fact that there are real obstacles. Professor Welsh does not indicate any specific course by which the pus could have carried the tube from the thyreoid capsule into the mouth through the tonsil. He accepted Professor Shellshear's evidence about the anatomy of the neck. In my opinion it would not be reasonable for the jury to find on Professor Welsh's evidence that the object which the plaintiff swallowed had come from the thyreoid cavity unless he pointed out how it could overcome the obstacles mentioned in Professor Shellshear's evidence.

According to this witness there were anatomical obstacles in the region of the thyreoid capsule and at the level of the hyoid bone; and the arrangement of muscles forming the pharyngeal wall in the region of the tonsil was another obstacle. Dr. Thompson gave an account of the course by which, in his opinion, the object about which the plaintiff gave evidence moved from the thyreoid capsule into her mouth. Her evidence does not agree with the evidence which Professor Shellshear gave about the anatomy of the neck and, as I have said, the evidence of Professor Shellshear was accepted by the plaintiff's only other expert witness, Professor Welsh. The jury could not possibly get as adequate an account of the anatomy of the neck from Dr. Thompson's evidence as from Professor Shellshear's evidence or the pictures and drawings which are in evidence. The jury could not possibly have any reasonable justification for declining to give credit and weight to the evidence of Professor Shellshear. It may be observed that Dr. Thompson's evidence is that the tube penetrated the pharynx. It is not clear that he said precisely that it went through the tonsil. No reliance was placed on any medical condition at any other place than the tonsil to support the hypothesis that the foreign object came into the mouth. The evidence of the expert witnesses called by the defendant, read from the transcript, is a refutation of the evidence of Professor Welsh and Dr. Thompson. But I decide the matter not on the weight of the evidence on the defendant's side, but on the question of the sufficiency of the evidence on the plaintiff's side, that is, as a matter of law. The nature and arrangement of the many parts of which the neck consists are facts established by the pictures and drawings in the evidence. Having regard to these facts, I think that the jury could not reasonably find on the evidence which Professor Welch and Dr. Thompson gave in this case that the object which the

plaintiff says that she swallowed came from the thyreoid cavity, up the neck, through the left tonsil into the mouth.

There is the further evidence about the condition of the plaintiff's tonsil, the symptoms of tetany, and her illness. I do not think that this evidence adds anything to support the proof of the issue of negligence to which the trial was confined. It adds nothing because there is no evidence on which the jury could reasonably find that the foreign body which the plaintiff said came out of her neck had been left in her neck by the defendant.

As I have shown, the foreign body, which the plaintiff said she swallowed and evacuated, was a piece of rubber tube characterized by the addition to it of a swab and material which looked like wire.

The evidence is insufficient to establish the fact that the defendant left in the wound a swab either with or without any such material protruding from it. The jury therefore could not reasonably find that the defendant left in the wound the foreign body described by the plaintiff in her evidence or by the jury in their special finding. The result is that there is no evidence on which the jury could properly make the special finding or return a verdict for the plaintiff on the issue in the action as defined by the plaintiff's particulars of the negligence which she alleged.

In my opinion the appeal should be disinissed.

British Medical Association News.

NOTICE.

THE General Secretary of the Federal Council of the British Medical Association in Australia has announced that the following medical practitioner has been released from full-time duty with His Majesty's Forces and has resumed practice as from the date mentioned:

Dr. R. St. J. Honner, 193, Macquarie Street, Sydney (January 7, 1946).

Medical Societies.

THE MEDICO-LEGAL SOCIETY OF VICTORIA.

IN July, 1942, the committee of the Medico-Legal Society of Victoria decided that the society should suspend its activities until circumstances permitted them to be resumed. The committee has now decided that the society shall resume its activities, and arrangements will be made to hold the usual quarterly meetings during 1946. It is intended that the first meeting should be held in March, 1946. It is hoped that the annual meeting and dinner of the society will be held in July, as has been customary.

The committee has decided that a subscription of £1 11s. 6d. shall be payable by each member on June 1, 1946, to cover membership from January 1, 1946, to June 1, 1947.

The honorary secretaries are John V. Barry, Equity Chambers, 472, Bourke Street, Melbourne, and R. J. Wright-Smith, Royal Melbourne Hospital, Melbourne. Members are requested to forward to the secretaries the names of legal or medical practitioners who are desirous of being elected to membership of the society.

Post-Graduate Work.

THE UNIVERSITY OF QUEENSLAND POST-GRADUATE MEDICAL EDUCATION COMMITTEE.

GENERAL REVISION COURSE AT BRISBANE.

THE University of Queensland Post-Graduate Medical Education Committee announces that a general revision course for medical graduates will be held during 1946. A synopsis of the first three parts of the course is given below. The fee for the first five parts of the general revision course will be £20, or for any one part thereof, £4. This will be paid by the purchase of chit-books containing fifteen tickets, each for one lecture. Tickets should be endorsed by the holders and handed to the attendant before each lecture. Service and ex-service medical officers whose application for pre-discharge training or post-discharge rehabilitation has been approved will be issued with five chit-books free of charge. For further information concerning the general revision course, application should be made to the Secretary of the University of Queensland Post-Graduate Medical Education Committee, Medical School, Herston Road, Brisbane, telephone B 0534.

Part I: Pædiatrics.

A course in pædiatrics, which began on February 4, will continue until Saturday, February 23. The course is being held at the Medical School, the Mater Misericordiæ Hospital, the Brisbane Children's Hospital and the Brisbane Women's Hospital.

Part II: Medicine.

A course in medicine will begin on Monday, February 25, and continue until Saturday, March 16. The course will be held at the Medical School, the Mater Misericordiæ Hospital, the Red Cross Blood Transfusion Service and possibly Rosemount Hospital.

Part III: Obstetrics and Gynæcology.

A course in obstetrics and gynæcology will begin on Monday, March 18, and conclude on Saturday, March 30. The course will be held at the Medical School.

LECTURES IN THE PRINCIPLES OF PATHOLOGY.

The University of Queensland Post-Graduate Medical Education Committee announces that a series of ten lectures in the principles of pathology will be given by Professor J. V. Duhig, commencing on Saturday, March 16, 1946. This course is part of Term III of the anatomy, physiology and pathology course arranged for candidates presenting themselves for Part I of the examination for the degree of master of surgery. It is also part of the senior course in medicine, suitable for candidates preparing themselves for the examination for membership of the Royal Australasian College of Physicians. The first class will be held at 10 a.m. on Saturday, March 16, 1946, at the Medical School, Herston Road. Thereafter, for the three weeks following, the class will meet at 8 p.m. on Mondays, Wednesdays and Fridays at the Medical School. Each lecture demonstration will be of two hours' duration. The fee for the course will be £7 7s.

Correspondence.

POLITICS AND THE MEDICAL PROFESSION.

SIR: Dr. John Dale in his address rightly said that political problems are at present of great concern to the profession. It is doubtful, however, whether his address can be classed as a scientific consideration of those problems. For instance, Dr. Dale said that nationalization or socialization of the medical service has been effected to a large extent in Germany and Russia, thus inferring that nationalization and socialization are the same; which they art not. Nationalization means the taking over by a capitalist State of some business, for example, the post, the railways or the mines *et cetera*. This is State capitalism, not socialism. Socialism is a political economy in which the means of production, including the land, are owned collectively and payment is made according to quality and quantity of work done. Germany under Hitler was capitalist and had much State capitalism directed by twenty big capitalists such as Thyssen. The Soviet Union is the only socialist country yet seen in the world. It presents the only existent examples of socialization; for socialization is impossible except in a socialist country, as I believe Dr. Upjohn pointed out.

Many of our medical services are now nationalized wholly or partly. The question as to how far this nationalization must be extended is a matter for practical consideration, for weighing pros and cons in this our capitalist State. It is not a question of socialism. A socialist may or may not endorse nationalization. I know no socialist principle that demands total nationalization of medicine. Socialists are opposed to centralized bureaucracy and strongly support local democratic control, which is not incompatible with democratic central authority. In this connexion it gives me pleasure to observe that in general the members of the British Medical Association do not adopt an intransigent attitude to proposed reforms *à la* Dale. They treat them

on their merits, that is practically, and not in relation to an abstract ideal.

Dr. Dale asserts that the world is a battleground between two philosophies, that of collectivism, in which the individual is subservient to an abstraction, the State, and on the other hand that of freedom, which aims to secure the utmost liberty and development for the individual. This also is erroneous. There are two opposed philosophies in the world today, as there have been for 2,000 years—namely, idealism and materialism. The idealists assert that spirit preceded matter, the materialists that spirit is a junction of certain highly organized forms of matter. State worshippers such as Mussolini and Hitler are always idealists. According to their writings, the State is a mystic divine entity, to which all individual aspirations must be sacrificed. In fact, they demanded the sacrifice of every liberty in favour of the greedy monopolists whose agents they were. There was no collectivism there.

On the other hand, the materialists, headed by Stalin, write no mystic nonsense about the State. They, like our law schools, regard the State as an organ of power directed against external and internal enemies. They therefore assert that the State is a temporal material thing, earthly, not divine, that will pass into the museum of antiquities when it is no longer necessary—that is, when socialism is universal and the latest State, the socialist State, will have neither internal nor external enemies. These materialists are collectivists. Regarding freedom, the materialists point out that man is at once one and many; that he is individual and yet cannot develop that individuality except in association with others; that freedom is the recognition of necessity as we can be free only to the extent that we know the laws of nature and can use them for our purposes; that collectivism gives each individual greater freedom than any other form of economy.

Medicine, like all science, is *de facto* materialist. Christian Science is idealist; surely Dr. Dale does get close to Christian Science when he says that a wicked person cannot be well. The American pathologists found Mussolini's body healthier than the average, and every-day observation tells us that the wicked are often exceedingly well by all medical criteria.

I agree with Dr. Dale that there is a tendency to centralized power. That tendency is the direct result of monopoly capitalism, which produced Hitler's monstrous machine with all its brutality and slavery. We met it with our centralized people's power. This must be so till we have the world which I am sure Dr. Dale desires, the world in which the administration of things replaces the administration of persons. We must recognize, however, that that world is coming, not because we like it, but because it is the inevitable result of man's historical development.

Let us then, as we do in obstetrics, try to ascertain the laws governing the delivery of this new world. Thus we may not only avoid such useless and destructive opposition as Hitler's, but also lend such constructive aid as may make this delivery as smooth and painless as possible.

Yours, etc.,

GERALD O'DAY.

473, Bourke Street,
Melbourne,
January 31, 1946.

RECENT ADVANCES IN THE DIAGNOSIS AND TREATMENT OF LUMBAR INTERVERTEBRAL DISK DISEASE.

SIR: It would appear possible, after reading the papers on intervertebral disk disease, contributed by Dr. Young and Dr. Clark (THE MEDICAL JOURNAL OF AUSTRALIA, January 12), that anyone with little experience in this branch of medicine might be left with the idea that the pathology was simple, the diagnosis presented no difficulties, and the surgical treatment as advocated was orthodox and obviously beneficial.

For instance, Dr. Young differentiates between minor and major tears of the annulus. It would be interesting to know upon what pathological material this teaching is based, or, as he prefaces his remarks by "I believe", is this all a matter of faith?

As Dr. Young is so insistent that the torn disk is the origin of the pain, I am confused by his observation that an injection of local anæsthetic into a tender sacrospinalis will often relieve it. This means either that pain is generated in the muscle, which is a negation of his primary thesis, or, stranger still, that the disk relieved of the "protective muscle spasm" is no longer capable of exciting painful impulses. I have a hope that in some future communications Dr. Young will allow that muscles, joints and ligaments of the low back may be allowed pains in their own right, and in response to various factors, as they have elsewhere.

Perhaps it would be for an orthopædic surgeon to comment on the description of the vertebral junction at the site of a disk degeneration as "a flail joint". This carries with it such grave implications.

Among the things which make diagnosis appear so simple is the strange divorcement of orthopædic and neurological examination. The practitioner is told that the latter is too difficult and is really unnecessary. It would seem desirable that the investigation of such a serious disorder should demand the most careful approach from every possible angle.

Dr. Clark further simplifies what for many surgeons is a very difficult problem, by saying that it is "easy and at the same time dishonest to eliminate cases which for psychological reasons are likely to be failures". I gather that Dr. Clark's teaching is to operate irrespective of their psychological state. This I assume eliminates the dishonesty of trying to protect people whose pains are in the psyche from the benefits of having two to four vertebræ fused. One of the primary tasks of those who operate for the relief of pain is to make sure that a peripheral attack may be competent to do so. Sciatic and low back pains, like facial pains, have often a purely psychological basis, and I have never found it easy to assess them or been conscious of the dishonesty inherent in my attempts.

Dr. Clark localizes the offending disk by "wobbling the spines", as Dandy described. He summarily dismisses Mr. Hugh Trumble's scientific assay on the value of this test, because Dandy is a great surgeon and invented ventriculography. Respect for age and authority, though admirable, have had little place in the advancement of science, and the complex mechanics of the low back are a long way from the ventricles.

For those among us less radically inclined, the consoling fact remains that the pioneers of this particular branch of surgery and most who have followed them with a massive experience, think that the surgical attack on the localized area of disk protrusion or softening is sufficient for the day. If we are to aim at "possible bony ankylosis" of every vertebra that "wobbles" on its neighbour, then this operation should be approached with much more caution and much less frequently than is at present the case.

Yours, etc.,

DOUGLAS MILLER.

Craignish,
185, Macquarie Street,
Sydney.
February 4, 1946.

INGUINAL HERNIA AND ITS REPAIR.

SIR: In the issue of THE MEDICAL JOURNAL OF AUSTRALIA of January 26, 1946, Lieutenant-Colonel Harley Turnbull gives some figures which, if further analysed, would be of the greatest possible value in the study of hernia. In Table II he lists the number of operations performed in one military hospital in Australia. He states that 700 operations were performed, of which 52 were for recurrent herniæ. He does not state, however, whether these 52 recurrences were from the 700 operations which he states were performed. If the 52 were recurrent herniæ from the original 700 would Colonel Turnbull kindly state: (*a*) how many of the recurrences were at the site of the original indirect inguinal hernia, and how many were at the site of direct herniæ; and (*b*) the type of primary operation performed in each case.

One gathers from the article that all the operations were performed by the Bassini method, but this is not specifically stated.

Yours, etc.,

C. CRAIG, M.D., M.S., F.R.A.C.S.,
Surgeon Superintendent.

General Hospital,
Launceston,
February 4, 1946.

ULCERS IN THE MOUTH: AN APPEAL FOR HELP.

SIR: Can anyone help me? I am a sufferer from ulcers in the mouth. They have, over a period of five years, gradually increased in frequency, so that I am now never free from them, and having from one to six ulcers at a time. I am a non-smoker and non-drinker, but tend to have a hyperchlorhydria. The ulcers are small, cream colour,

surrounded by a zone of hyperæmia, very painful, and occur on the mucosa of the tongue, cheek or gum. At times a cervical gland is enlarged and painful. At present I have five of these ulcers, and can hardly speak and cannot eat solid food because of pain.

The ulcers disappear in about two weeks, and I have not found any application that will shorten this period. I would be grateful for any advice regarding prophylaxis or treatment. Is there any theory regarding their cause?

Yours, etc.,

February 3, 1946. M.B., B.S.

TOOTHACHE AND FOLK-LORE.

SIR: In connexion with your "Current Comment" on "Toothache and Folk-Lore", it might interest your readers to know that, in 1913-1914, a well-known Chinese herbalist advertised in the Ballarat trams: "Worms skilfully extracted from decaying teeth."

Yours, etc.,

111, Collins Street, PAUL G. DANE.
Melbourne,
February 5, 1946.

FUNCTIONAL DISORDERS.

SIR: May I correct a misapprehension which has been stated not a few times in your correspondence columns in recent years. I would like to urge on those practitioners who ask for more instruction in psychological medicine that the reading of articles and books, and even attendance at lectures and demonstrations have only a limited value unless the student (pre-graduate or graduate) is prepared to engage in clinical work. One can no more learn psychiatry out of books or papers than any other branch of medical science and art. There are plenty of facilities in Sydney for acquiring experience in examining and treating patients suffering from functional disorders—if the student is prepared to find the time.

Meanwhile I would commend to Dr. Pain's notice a series of articles published in this journal, July, 1940, onwards.

Yours, etc.,

Sydney, W. S. DAWSON.
February 1, 1946.

OBSTETRIC BULLETINS.

SIR: During the latter war years it has been my pleasure, with the sponsorship of Wyeth Incorporated, to furnish the wartime graduate in the services with a series of obstetric bulletins.

The original intention was to publish twelve. The end of the war has meant the discharge of many doctors from the services, while the printers' and coal-miners' strikes delayed the publication of the last five of the bulletins. Obviously the distribution became difficult, and I have been approached by a number of ex-servicemen as to where the remaining bulletins might be obtained.

May I suggest that any doctor either discharged from or still in the services may procure the remaining bulletins as they appear by sending a permanent address to myself at the Obstetrics Department, University of Sydney.

Yours, etc.,

BRUCE T. MAYES,
Professor of Obstetrics.
University of Sydney,
February 6, 1946.

THE ADEQUACY OF MEDICAL TRAINING.

SIR: I would like to congratulate Dr. Basil Williams on his excellent and thought-provoking article on "The Adequacy of Medical Training", published in the issue of THE MEDICAL JOURNAL OF AUSTRALIA of the second instant. Two of his points particularly appeal to general practitioners. Firstly, the importance of the psychological approach to the patient in all branches of medicine from medicine to obstetrics. Most practitioners learn the elements of this subject by practical experience *plus* the exercise of their innate common sense. A course of training in the early preclinical years on psychology *plus* a course given by a senior general practitioner would be of inestimable value in smoothing the early years in practice for the young graduate. Unless group medicine in the future can provide a substitute for the old apprentice system, this appears to be the only alternative. The second point is his complaint of the time spent in the first year in the purely scientific subjects—physics, chemistry, botany and zoology. Since the projected alteration of the curriculum for secondary schools apparently aims to make the fifth year a year of preparation for students proceeding to the university, it would be possible to include chemistry and physics for all students for the faculties of medicine, engineering and the sciences. The time thus saved could be devoted to psychology and perhaps philosophy.

It has long been claimed that the medical course is more fashioned to produce specialists than general practitioners, thus, as Dr. Williams states, catering more for the minority of 10% than for the majority of men who will become general practitioners. Let us urge that the framers of the curriculum will pay attention to this want and include training in the principles of medical practice and the psychological handling of patients, even if it means the omission of some of the detailed aspects of the more specialized subjects.

Yours, etc.

Tamworth, KEITH J. B. DAVIS.
New South Wales,
February 12, 1946.

THE DIGESTION OF DOGS AND CHRONIC OSTEOMYELITIS.

SIR: This is primarily a request for information, but is also prompted by the hope that it may stimulate interest, in case the idea is new.

A correspondent, writing in a recent issue of the *British Medical Journal*, has drawn attention to the remarkable speed with which dogs recover from accidental or operation wounds. Now dogs also seem to be able to digest solid fragments of dead bone and putrescent fat, tendon and muscle. These observations suggest the following questions:

Do dogs bury bones to attract soil bacteria, which help their digestive processes?

Might not dogs' saliva, gastric juice *et cetera* contain some substances which could be used for the local treatment of chronic osteomyelitis?

Might not dogs' serum contain precursors of these substances, which could be used systemically for the same disease?

Chronic osteomyelitis is such a painful, crippling and demoralizing disease, that, however fantastic, no avenue should be left unexplored (*pace* A.P.H.).

Yours, etc.,

February 1, 1946. "CURIOUS."

Naval, Military and Air Force.

APPOINTMENTS.

THE undermentioned appointments, changes *et cetera* have been promulgated in the *Commonwealth of Australia Gazette*, Number 23, of February 7, 1946.

NAVAL FORCES OF THE COMMONWEALTH.

Permanent Naval Forces of the Commonwealth (Sea-Going Forces).

Emergency List.

Promotions.—The following is promoted to date 4th January, 1946, with seniority in rank as shown opposite his respective name: *To be Surgeon Captain*—Surgeon Commander (Acting Surgeon Captain) Alexander Scott-Mackenzie, 20th June, 1943.

Citizen Naval Forces of the Commonwealth.

Royal Australian Naval Reserve.

Appointments.—John Gordon Barbour and Ronald Keith Smyth are appointed Surgeon Lieutenants, dated 1st December, 1945.

ROYAL AUSTRALIAN AIR FORCE.

Citizen Air Force: Medical Branch.

The appointment of Temporary Squadron Leader T. B. Lindsay (282073) is terminated on demobilization with effect from 10th September, 1945.

The appointments of the following Temporary Flight Lieutenants are terminated on demobilization with effect from the dates indicated: M. M. McKeown (255912), 31st October, 1945, H. G. Hiller (256811), W. B. MacDonald (256798), 1st November, 1945.

Australian Medical Board Proceedings.

QUEENSLAND.

THE undermentioned has been registered, pursuant to the provisions of *The Medical Acts, 1939 to 1940*, of Queensland, as a duly qualified medical practitioner:

Macindoe, Philip Hudson, B.S., 1935 (Univ. Sydney), "Merchiston", Garfield Drive, Paddington, Brisbane.

Books Received.

"An Introduction to Physical Anthropology", by M. F. Ashley Montagu; 1945. Springfield: Charles C. Thomas. 8¼" × 5¼", pp. 339. Price: $4.00.

"Pacific Parade", by Frank Clune; 1945. Melbourne: The Hawthorn Press. Sydney: Angus and Robertson Limited. 8" × 5", pp. 132. Price: 6s.

"Psychology for Nurses: Designed and Written for Student Nurses", by Bess V. Cunningham, Ph.D.; 1946. New York, London: D. Appleton-Century Company, Incorporated. 8¼" × 5¼", pp. 356, with illustrations.

"Films in Instruction, Part I: Films: Their Use and Misuse", by Squadron Leader N. H. Rosenthal, B.A., B.Sc., with a Foreword by Professor G. S. Browne, M.A. (Oxon.); 1945. Melbourne: Robertson and Mullens Limited. 8¼" × 5¼", pp. 50, with illustrations. Price: 3s. 6d.

"An Introduction to Clinical Surgery: Surgical Wherefores and Therefores", by Charles F. M. Saint, C.B.E., M.D., M.S., F.R.C.S. (Eng.), F.R.A.C.S.; 1945. Cape Town: The African Bookman. 8¼" × 5¼", pp. 303. Price: 25s.

Medical Appointments.

According to the provisions of the *Native Administration Act*, 1905-1941, of Western Australia, the following medical practitioners have been appointed protectors of natives for the districts mentioned: Dr. Lamb Musso, all districts within the State; Dr. D. J. Oldmeadow, Broome and all districts and parts of districts within the magisterial district of Broome; Dr. I. Roberts, Derby and all districts and parts of districts within the magisterial district of West Kimberley; Dr. H. C. Pope, Marble Bar, Port Hedland and all districts and parts of districts within the magisterial districts of Pilbara and Port Hedland, Roebourne, and all districts and parts of districts within the magisterial district of Roebourne; Dr. R. A. D. Pope, Onslow and all districts and parts of districts within the magisterial district of Ashburton; Dr. V. H. Webster, the magisterial district of Wyndham.

Dr. F. W. A. Clements has been appointed a member of the Council of the Canberra University College.

Dr. G. H. McQueen has been appointed medical officer of the Central Board of Health Department, South Australia.

Dr. J. M. Dwyer has been reappointed honorary assistant pathologist, Royal Adelaide Hospital, Adelaide.

Dr. H. R. G. Poate has been appointed President of the New South Wales Medical Board.

Dr. C. J. M. Walters has been appointed a member of the New South Wales Medical Board and a member of the Board of Health, New South Wales.

Dr. Frances C. Robertson has been appointed a member of the Board of the Hobart Public Hospitals District in accordance with the provisions of *The Hospitals Act*, 1918, of Tasmania.

Dr. Gilbert Brown has been appointed honorary consulting anæsthetist, Royal Adelaide Hospital, Adelaide.

Diary for the Month.

FEB. 26.—New South Wales Branch, B.M.A.: Ethics Committee.
FEB. 27.—Victorian Branch, B.M.A.: Council Meeting.
FEB. 28.—South Australian Branch, B.M.A.: Scientific Meeting.
MARCH 1.—Queensland Branch, B.M.A.: Branch Meeting.
MARCH 2.—Tasmanian Branch, B.M.A.: Annual Meeting.
MARCH 5.—Federal Council, B.M.A., in Australia: Meeting at Sydney.
MARCH 5.—New South Wales Branch, B.M.A.: Organization and Science Committee.
MARCH 6.—Western Australian Branch, B.M.A.: Council Meeting.
MARCH 6.—Victorian Branch, B.M.A.: Branch Meeting.
MARCH 7.—New South Wales Branch, B.M.A.: Special Groups Committee.
MARCH 7.—South Australian Branch, B.M.A.: Council Meeting.
MARCH 8.—Queensland Branch, B.M.A.: Council Meeting.
MARCH 12.—Tasmanian Branch, B.M.A.: Ordinary Meeting.
MARCH 12.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
MARCH 19.—New South Wales Branch, B.M.A.: Medical Politics Committee.
MARCH 19.—New South Wales Branch, B.M.A.: Ethics Committee.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Honorary Secretary, 135, Macquarie Street, Sydney): Australian Natives' Association; Ashfield and District United Friendly Societies' Dispensary; Balmain United Friendly Societies' Dispensary; Leichhardt and Petersham United Friendly Societies' Dispensary; Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney; North Sydney Friendly Societies' Dispensary Limited; People's Prudential Assurance Company Limited; Phœnix Mutual Provident Society.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federated Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178, North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205, Saint George's Terrace, Perth): Wiluna Hospital; all Contract Practice appointments in Western Australia. All Public Health Department appointments.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to the Editor, THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2).

Members and subscribers are requested to notify the Manager, THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this journal. The management cannot accept any responsibility or recognize any claim arising out of non-receipt of journals unless such a notification is received within one month.

SUBSCRIPTION RATES—Medical students and others not receiving THE MEDICAL JOURNAL OF AUSTRALIA in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rates are £2 for Australia and £2 5s. abroad per annum payable in advance.